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ABSTRACT

Following an overview of the amount and focus of the literature on occupational development of women, four major theories of vocational development are discussed in depth in part 1: Roe's theory of career choice; Ginzberg and associates' theory of vocational decision making, Super's theory of the development of self-concept, and Holland's theory of vocational choice. Summaries and critiques are given of two theories of occupational development of females: Zytowski's theory of the duality of women's roles and Psathas' theory of occupational choice for women. A review of literature in part 2 focuses on the three major hypotheses of this study, sex differences in (1) self-concept and sense of competence; (2) motivational aspects including related attitudes, aspirations, and expectations; and (3) acquisition of educational means (knowledge, training, skills), which includes discussion on implementation and impact of career and vocational education legislation. Part 3 is a discussion of the most important socialization influences on the occupational development of women including influence of teachers, parents (attitudes, expectations, maternal employment, socioeconomic status), peers, and visual media. Part 4 is an overview by age level of those interventions to enhance aspects of girls' occupational potential. Description of the interventions are given with occasional delineation of effects. A list of references follows. (FP)

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IMPROVING GIRLS' OCCUPATIONAL POTENTIAL

A REVIEW OF THE LITERATURE

Jeana Wirtenberg
Office of Research
U. S. Commission on Civil Rights

February 1978

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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IMPROVING GIRLS' OCCUPATIONAL POTENTIAL
A REVIEW OF THE LITERATURE

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REVIEW OF THE LITERATURE

Part One.. Overview and Introduction

While there is a substantial body of literature on occupational development, relatively little of it is directly relevant to women. At least four major theories of occupational development have been proposed and literally hundreds of empirical studies have been conducted to test these theories. By and large, the theories and the tests of the theories are focussed on male occupational development. Female occupational development is either ignored in this literature, or is treated as a "trivial corollary to men's career development".[1]

In the last few years, there has been an upsurge in interest in women's occupational development per se. It is now recognized that women's occupational development is unique in many respects, and cannot be treated merely as a corollary of mens'. The bare beginnings of several theories have been proposed, and a number of studies have been conducted. While no theory is adequate at this time to fully describe women's occupational development, some valid generalizations can be extracted from this literature.

In addition to theories of occupational development, there is a growing body of literature on sex differences in occupational development. The literature can be broken down into a number of areas, each of which focusses on a different component of what this study is calling "occupational potential". Thus, there is a literature on sex differences in 1) self-concept and sense of competence, 2) motivational aspects of occupational development, including related attitudes, aspirations and expectations, and 3) acquisition of educational means to occupations, including knowledge, training and skills.

There is no theory which questions the importance of socialization factors on the occupational development (and attainment) of women. There is a considerable and growing body of literature on the influence of various institutionalized educational practices, such as sex-biased counseling materials and tests, vocational education programs, and the like. Only a small amount of attention has been paid to the more subtle and insidious aspects of the "hidden curriculum" such as teachers' attitudes and behavior. The evidence which does exist, however, suggests large differences in teachers attitudes, expectations, perceptions and behaviors with respect to girls and boys.

The significance of parents' influence on girls' occupational development is paramount. Critical variables have been isolated and include such factors as whether or not the mother is working, what the mothers' attitude is towards her work and towards working women in general. While there has been less attention paid to the influence of fathers on their daughters occupational development, fathers' socio-economic status may be a key factor.

Compared to educational and parental influences, relatively little is known about how peer influences may affect girls' occupational development and choice. The literature attesting to the importance of peer influence in many other areas, however, may shed light on how it operates. It may also suggest during which stages of development peer influence is likely to be the greatest.

Finally, other significant socializers which exert influence over girls' occupational development should be recognized. The media, including TV, radio, magazines, etc., must bear considerable responsibility for channelling women's occupational aspirations.

In response to the inequities described in Chapter I and in this Chapter, educational interventions and innovations have begun to emerge. Most have been implemented on an experimental basis and are presently undergoing development and refinement. There are a few preliminary reports on these innovations, and several of these include an evaluative component to test the effectiveness of the intervention with regard to particular objectives or hypotheses.

This literature review describes the major theories of occupational development, focussing on what they can contribute to our understanding of women's occupational development in general, and to this study in particular. Two theories which focus primarily on women's occupational development are then summarized and critiqued. Following this, the literature on sex differences in occupational development is reviewed. It is divided into three areas, paralleling the three major hypotheses of this study, sex differences in: self-concept and sense of competence; motivational aspects of occupational development, including related

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attitudes, aspirations, and expectations; and acquisition of educational means to occupations, including knowledge, training, and skills.

Third, this review examines the literature on socialization influences on occupational development. Studies on the effects of teachers' attitudes and behavior with regard to boys and girls are reviewed for their relevance to girls' occupational development. Studies on parents are reviewed in order to isolate some of the key variables influencing girls' occupational preferences. Studies and theories on peer influence are examined for insights into how it may be operating and when it may be most influential. To complete the picture, the evidence on media influence is briefly discussed.

The fourth and final topic for this literature review is an overview of the educational interventions and innovations which are attempting to enhance the occupational potential of young women. The interventions are briefly described and, wherever possible, their effects are delineated.

Part Two. Theoretical Contributions to Understanding Women's Occupational Potential

1. General Theories of Vocational Development

This section reviews the four major theories of vocational development: those proposed by Roe, Super, Ginzberg and associates, and Holland; and two theories which focus primarily on women's occupational development, those of Zytowski and Psathas.

There are two specific objectives to these reviews. The first objective is to summarize each theory in order to highlight its focus, central concepts, and hypotheses. The second objective is to describe how the theory does and does not contribute to our understanding of female occupational development. Out of a synthesis of the important elements in each of the theories, factors will be identified which are deemed worthy of consideration and inclusion in the design of this study.

A. Roe's Personality Theory of Career Choice

Roe hypothesized that there is a relationship between individuals early experience and their attitudes, abilities, interests, and other personality factors which affect their ultimate vocational selection.[2] The theory is essentially grounded in psychoanalytic theories and concepts.

According to Roe, patterns of early experience with parents, in terms of the degree of emotional concentration on the child (ranging from overprotection to overdemandingness), degree of avoidance of the child (ranging from emotional rejection to neglect of the child), and degree of acceptance of the child (ranging from casual to loving acceptance of the child) establish a pattern of early satisfactions and frustrations which are then translated into patterns of needs. The direction of psychic energy expenditure is eventually determined by this need pattern. This pattern of needs is hypothesized to be the major determinant of the occupation to which the individual applies him/herself. This is relevant not only to the individual's vocational choice, but to the total life pattern of the individual, since it determines what sort of special abilities and interests predominate.

Not only do these needs determine the direction in which an individual's psychic energy is expended, but the intensity as well as the organization of these (primarily) unconscious needs is hypothesized to be "the major determinant of the degree of motivation as expressed in accomplishment".[3] Thus, needs which have been satisfied routinely as they appear do not develop into unconscious motivators, while needs which have not been satisfied may provide unconscious motivations for achievement.

Roe draws a conceptual dichotomy between those occupations which do and do not involve people. Depending on their early childhood experiences, an individual is either drawn toward people and occupations involving people, or away from such occupations. Roe points out that verbal abilities are likely to be associated with the former interpersonal orientation, while scientific and mechanical interests and aptitudes are associated with the latter.

In her book The Psychology of Occupations, (which was first published in 1956), Roe attempted to relate individual's attitudes and early experiences to the spectrum of occupations. She developed a classification of occupations which would allow for predictions of which occupations person-oriented individuals would prefer and those that might be preferred by persons not oriented toward persons.[4] Reviews of the considerable research which has been based on Roe's theory suggest that it is not supported by the data.[5] One such reviewer, Samuel Osipow, recommended that the relationship between childhood experiences and personality needs clearer delineation in order to improve the validity of the theory.[6]

Its validity for women is particularly suspect, despite the fact that Roe clearly acknowledged the existence of large sex differences in interests.

> "In summary, men are more interested in scientific activities, mechanics, physical activity, politics, and sales activities than women are. Women show greater interest than men do in people, social and clerical work, teaching, literature, art, and music."[7]

Moreover, Roe acknowledged the significance of these differences for women's occupational status: "That these differences are of importance for vocational choice is obvious."[8]

Yet surprisingly, Roe never explicitly delineated the obvious implication of her theory with regard to sex differences in early childhood experiences. Since her theory postulates that early experiences are the critical determinants of an individual's interests and ultimate vocational choice, and she finds large sex differences in interests and vocational choice, she must make the inference that there are large qualitative differences in girls and boys early childhood experiences.

In fact, this would be an excellent test for her theory. Specific predictions could be generated about the patterns of early childhood experience which, according to the theory, would most likely lead to the known patterns of sex differences in vocational choice. The theory could than be tested explicitly using either existing data banks or by generating new (possibly retrospective) data on males and females early childhood experiences. Research along these lines might facilitate a more informed assessment of the validity of Roe's theory in general and for women in particular.

The contribution of Roe's Theory to our understanding of women's occupational development lies in its emphasis on the impact of personality and childhood experiences as important variables to consider in any theory of occupational development. However, its lack of empirical support and failure to deal definitively with women's occupational development render it "an unproductive basis for building a theory of women's career development.[9]

B. Ginzberg, Ginsburg, Axelrad and Herma Theory [10]

The theory of Ginzberg and his associates represented an attempt to identify the major factors in vocational decision-making during successive periods of individuals' maturation.[11] The basic assumption is that individuals reach their ultimate vocational choice through a series of decisions over a period of many years; "the cumulative impact is the determining factor".[12]

There are three basic elements in Ginzberg et. al's theory: the conceptualization of occupational choice as a process, the view that the process is largely irreversible, and the view that compromise is an essential aspect of every choice.[14]

While Ginzberg et. al. recognized that the process begins at birth, they chose to only study the process from age eleven on because it "appeared to be the first time that a young person recognizes that he will eventually have to do something about choosing his future work".[15] The validity of this assumption is questionable, and moreover, it is clear that options are restricted well before this age for girls, whether or not they are consciously aware of them. (Girls limited occupational aspirations and expectations are discussed in greater detail in the next section.)

According to the theory, there are three stages of occupational development: the fantasy stage, up to age 11; the stage of tentative choices, between 11 and 17; and the stage of realistic choices, between 17 and young adulthood when a person finally determines his or her choice. During the fantasy period the child believes s/he can become whatever s/he wants to become. As the child moves theough the tentative stage, his or her choices are determined almost exclusively by such subjective factors as interests (during sixth and seventh grades) capacities (during eighth and ninth grades), and values (during tenth and eleventh grades). During the realistic period, individuals seek to work out a compromise between their interests, capacities, and values, and the opportunities and limitations of the environment. It begins with the exploration stage, followed by the crystallization stage when the occupational choice is determined and finally by the specification stage, when the choice is delimited, presumably to a particular job.

It can be noted that there are large sex differences in every one of the key dimensions in Ginzberg et. al.'s theory; during the tentative stage there are large differences in interests, perceptions of capacities, and values, and during the realistic stage, we know there are large differences in opportunities and limitations of the environment. These will be amply documented in the next section.

The view that the process is irreversible stems from simple observation of "the reality pressures which introduce major obstacles to alterations in plans."[16] Clearly, girls suffer from such reality pressures to at least as great an extent as do boys. The contention that every occupational choice is of necessity a compromise reflects the fact that "the individual tries to choose a career in which he can make as much use as possible of his interests and his capacities in a manner that will satisfy as many of his goals as possible"...weighed against "the opportunities and the limitations of the environment", and an assessment of "the extent to which they will contribute to or detract from his securing a maximum degree of satisfaction in work and life".[17]

Much of Ginzberg et. al. theory is considered an important contribution, but it also met with considerable criticism. The theory itself was criticized by Super for its failure to 1) build adequately on previous work; 2) disentangle vocational "choice" from "preference", and 3) study and describe the compromise process.[18] The second and third criticisms are particularly important when evaluating the validity and relevance of the theory for women.

During early adolescence, there is little need to distinguish between a vocational "preference" and "choice", since neither is necessarily acted upon in reality. During the realistic stage, however, "choice" usually indicates a preference that has already been acted upon.[19] Because the environment imposes a greater number and more severe limitations on the range of women's possible occupational "choices" in comparison to men's it is possible that most women's occupational "choice" is not a reflection of their "preferences" at all. Rather, the actual occupation "chosen" by a woman has been typically delimited to a small set of equally "unpreferred" possibilities. The only "choice" for many women, then, has been choosing the least undesirable among a limited number of relatively undesirable alternatives.

Ginzberg's failure to describe the compromise process itself further limits the theory's explanatory power for women's occupational development. Probably even more than for men, compromise is a crucial aspect of the process of women's occupational development. Much could be gained by examining the degree to which and the conditions under which women make compromises between their interests, capacities, values and the opportunities afforded them. In particular, how do the compromises that women make differ from those that men make? An even more important question is: Under what circumstances and with what sorts of environmental supports are women most likely to resist compromise in order to maximize their potential? A theory of women's occupational development should begin to address these and related issues.

The Ginzberg theory has also met with criticism because of its inadequate data base. The theory was originally based on a cross-sectional study of 64 boys.[20] Most of the research on the theory has focused on lower-class, white, early adolescent boys.[21]

Despite these problems, Ginzberg's theory can contribute to our understanding of women's occupational development in at least four ways. First, it suggests that "decision-making" may be a useful conceptual tool for understanding the process of women's occupational development. Such a model could be more explicitly developed and subjected to empirical test. Second, the view that the process is largely irreversible should stimulate concern and catalyze research aimed at early intervention in the process. Moreover, the nature of the intervention should be consonant with the child's stage of vocational development. Thus, if the developmental stages postulated by Ginzberg are proven to reflect most girls' occupational development, appropriate interventions could be designed at each stage of development. For example, girls in the fantasy stage might be presented with adult female role models in nontraditional occupations to stimulate identification and fantasy activity. Interventions aimed at girls in the tentative stage should focus on broadening of interests, maximization of self-concept and sense of competence, and clarification of work values (and in that order according to the theory).

Third, the contention that reality pressures do not stifle choice until late adolescence suggests that interventions aimed at countering the effects of these pressures would be most effective during late high school and college. Finally, the emphasis on compromise as a key variable suggests the sorts of important questions enumerated above.

C. Super's Developmental Self-Concept Theory

Compared to the theories of Roe and Ginzberg, Donald Super's theory of vocational development is the most highly developed. It has also received the most empirical confirmation.

Super views the process of vocational development as essentially one of developing and implementing a self-concept:

> "it is a compromise process in which the self concept is a product of the interaction of inherited aptitudes, neural and endocrine make-up, opportunity to play various roles, and evaluations of the extent to which the results of role playing meet with the approval of superiors and fellows".[23]

A second key point in Super's theory is the view that "work is a way of life".[24] Stemming from this perspective is the assumption that vocational satisfaction and more generally, satisfaction in life, is largely a function of the congruence between ones work and one's self-concept of abilities, interests, personality traits, and values.

Super summarized his theory in ten propositions. The first three propositions are descriptive statements about the nature of individuals and occupations. Super acknowledges the existence of individual differences in abilities, interests, and personalities. He then points to the "multipotentiality" of individuals, i.e., the fact that each person has the potential for success and satisfaction in a number of occupations. The third proposition recognizes the existence of "occupational ability patterns". This is the tendency for individuals with similar abilities, interests, and personality traits to cluster together, thus forming patterns of occupational families.

Two propositions acknowledge the changing quality of vocational preferences and competencies, and describe the series of developmental stages which characterize the process. Vocational choice and adjustment is seen as a continuous process involving "growth, exploration, establishment, maintenance, and decline".[25] Within each of these stages, Super postulates the same three stages as in the Ginzberg model: fantasy, tentative, and realistic.

Two propositions describe factors which may influence the nature of an individual's career pattern. In addition to characteristics of the individuals themselves (e.g., mental ability, and personality characteristics), several external factors are seen as important. In particular, parental socioeconomic level, the individual's exposure to opportunities, and available role models are seen as critical factors.

Another basic element of the theory emphasizes the potential contribution that guidance can make to the individual's occupational development. Development can be guided, "partly by facilitating the process of maturation of abilities and interests and partly by aiding in reality testing and in the development of the self concept".[26]

A final proposition focuses on the importance of role playing in the process of compromise between the individual's self concept and reality. No distinction is made between role playing that occurs in fantasy, in the counseling interview, or in real life activities such as school classes, clubs, part-time work, and entry jobs.[27]

A great deal of research has been based on Super's theory, resulting in empirical confirmation of two of its most fundamental aspects. First, research has supported the proposition that individuals view career choice as a way in which to implement their self-concept.[28] Second, studies have supported Super's career developmental stages and the tasks associated with each stage.[29] The major shortcoming of the theory is its limited applicability to the full range of occupations and individuals. Thus, for many individuals and for women in particular, the environment provides only the most limited range of opportunities for actualization of their self-concepts.

Although just about every aspect of Super's theory has relevance to female occupational development, not enough attention has been focussed on making its implications explicit. Some of the most important implications are described here.

The view that vocational development is one of self concept implementation has been mentioned and is of utmost significance for women. According to the theory, a woman's self-concept will help determine the occupations she prefers, the kind of training she undertakes, and the degree of satisfaction she experiences in her work and in her life. With regard to job satisfaction, for example, Super hypothesizes that the greater the discrepancy between self-concept and occupational role requirements, the less satisfaction a woman may experience in her work.

It is clear that women's vocational self-concepts differ greatly from men's, both in terms of the salience of vocation to total self-concept and the characteristics which are included in vocational self-concepts. The nature of these differences can be clarified by a discussion of the interrelationship among women's actual and ideal self-concepts, sex-role stereotypes, and related attitudinal variables. Such a discussion is included in Part 2 of this review, "Sex differences in occupational development".

Another important area of application for women stems from Super's emphasis on role models, role playing, and guidance. To the extent that women's vocational choices are determined by existing role models, opportunities for role playing, and guidance from school counselors, their choices are likely to be restricted to a narrow range of traditionally female occupations. As Astin and Harway pointed out, "Young girls rarely have the opportunity to know about, much less observe, women in nontraditional occupations".[30]

The final important implication which will be mentioned here has to do with exposure to opportunities. It seems almost superfluous to point out that girls and boys are differentially exposed to opportunities throughout their years of socialization and as adults. A comprehensive theory of occupational development for women should focus on the unique aspects of women's vocational self-concepts, the characteristic patterns of vocational socialization of women in our society, and the vocational opportunity structures with which women are presented.

D. Holland's Theory of Vocational Choice

John Holland's theory of vocational choice is essentially a description of a typology which characterizes aspects of vocational behavior. The theory postulates that people can be categorized by their resemblance to each of six personality types: realistic (R), investigative (I), artistic (A), social (S), enterprising (E), and conventional (C). The environments in which people live and work can be similarly categorized by these labels. An individuals career choice, according to the theory, is a reflection of his or her personality type, in interaction with the characteristics of the surrounding environment. In particular Holland stresses the influence of such environmental factors as social pressures in early adolescence and childhood experiences with parents as important influences on vocational choices.

Environmental factors are not seen as important in and of themselves, but only as they influence the individuals' organization of attitudes, perceptions, and knowledge about the vocational world and how he or she should interact with it. Thus, according to Holland, a girl might develop images (or stereotypes) of the activities involved in a variety of kinds of work and then try to integrate these images into her view of how she fits into the work world. The core hypothetical constructs in the theory, therefore, are essentially perceptual and attitudinal rather than behavioral.

In order for an individual to become aware of and actualize inherent preferences, the environment (i.e., parents, peers, teachers, and counselors) must provide the opportunities and encouragement so that she or he may freely choose among a wide range of alternatives. Moreover, the outcomes of the interaction between an individuals personality and environment are not limited to vocational choice. These outcomes also include other aspects of individual's behavior, such as educational achievement, personal competencies, and social behavior.

The theory proposes that individuals with particular orientations and with certain environmental supports will seek corresponding occupational environments. The theory does not attempt to explain how individuals arrive at particular orientations or develop particular types of personalities. Thus the theory is essentially descriptive, rather than explanatory.

Theoretically, each person can be described by a code which orders the different types (e.g., SIAERC), and this ordering determines the direction of his or her vocational choice. For example, a person aspiring to social occupations primarily, can be more specifically understood if we also know that he or she aspires to subgroups of social-investigative (SI) or social-investigative-artistic (SIA) occupations. Thus, a person's personality type (represented by the first code) determines the primary direction of his or her vocational choice, and the types that a person resembles secondarily and tertiarily (represented by the second and third codes) determine the secondary and tertiary directions of his or her vocational choice.

According to Holland's theory, the six personality types develop as a result of increasing differentiation of preferred activities, interests, competencies, and values. The Realistic type prefers activities that involve the "explicit, ordered or systematic manipulation of objects, tools, and machines", and is averse to educational or therapeutic activities.[31] Such a person is likely to acquire manual, mechanical, electrical, and technical competencies and to be deficient in social and educational competencies.[32] Illustrative preferred occupations include mechanic, plumber, and radio operator.

The Investigative type prefers activities that "entail the observational, symbolic, systematic, and creative investigation of physical, biological, and cultural phenomena in order to understand and control such phenomena"[33] and is averse to persuasive, social and repetitive activities. These behavioral tendencies lead in turn to an acquisition of scientific, and mathematical competencies and to a deficit in persuasive competencies.[34] A person falling in this category might prefer such occupations as engineer, biologist, and astronomer.

The Social type prefers activities that "entail the manipulation of others to inform, train, develop, cure, or enlighten;" and is averse to "explicit, ordered, systematic activities involving materials, tools or machines."[35] These behavioral tendencies lead in turn to an "acquisition of human relations competencies such as interpersonal and educational competencies and to a deficit in manual and technical competencies".[36] A "social" person might choose such occupations as clinical psychologist, teacher, and nurse.

The Enterprising type prefers activities that "entail the manipulation of others to attain organizational goals or economic gain; and is averse to observational, symbolic, and systematic activities."[37] These behavioral tendencies lead in turn to an acquisition of leadership, interpersonal, and persuasive competencies, and to a deficit in scientific competencies.[38]. Enterprising occupations include, for example, business executive, hotel manager, and real estate salesperson.

The Conventional type prefers activities that "entail the explicit, ordered, systematic manipulation of data, such as keeping records, filing materials, reproducing materials,"....and is averse to "ambiguous free, exploratory, or unsystematic activities".[39] These behavioral tendencies lead in turn to an acquisition of clerical, computational and business system competencies and to a deficit in artistic competencies.[40] Conventional occupations include bank teller, bookkeeper, and court stenographer.

The Artistic type prefers "ambiguous, free, unsystematized activities that entail the manipulation of physical, verbal, or human materials to create art forms or products" and is averse to "explicit, systematic, and ordered activities".[41] These behavioral tendencies lead, in turn, to an acquisition of artistic competencies - language, art, music, drama, and writing - and to a deficit in clerical or business system competencies.[42] An individual in the "artistic" category might select such occupations as artist, author, musician, or stage director.

Of special interest for purposes of this project is Holland's observation that women as a group tend to receive more social, artistic, and conventional codes than men, while men tend to receive more investigative, enterprising, and realistic codes than women.[43] These findings reflect the widely recognized sex-segregation of occupations on the whole.[44] For example, while 51% of men with at least some high school education are employed in the "realistic" occupations, only 18% of women at this level are employed in these occupations. Conversely, while 42% of women with at least some high school education are employed in "social" occupations, only 7% of men at this level are in "social" occupations.[45] Comparably large sex differences are found among men and women with college educations.[46] In the "conventional" category, however, there is a sex x education interaction effect. While "conventional" jobs at the "some high school or above" level are disproportionately held by women, this is not true at the higher educational levels.[47] Although the sex difference is not apparent at the higher education levels in the conventional category taken as an aggregate, the sexes do differ in the types of jobs they hold within this category. Thus a disproportionate number of women are found in the clerical and secretarial fields, while men are more likely to be accountants and office machine operators.

It is interesting to note that individuals of both sexes and at both educational levels (high school and college) aspire to occupations in the "enterprising" category far below their actual employment rate.[48] In contrast, both men and women with high school educations aspire to "artistic" and "social" occupations at rates considerably higher than the current employment reality.

Table 1 below gives the raw number and percentage of men and women who were employed in each of the six occupational categories in 1970. The figures are based on a recode of detailed occupational categories in the 1970 Census (U.S. Bureau of Census, 1973).[49]

Evidence and Validation

Holland's theory has generated a vast amount of research, mostly aimed at establishing the validity of the proposed typology and the

Table 1

	Men		Women	
	Number	%	Number	%
R	26,852,787	59.5	7,487,879	27.4
I	3,204,251	14.2	486,240	1.8
E	673,364	1.4	299,765	1
S	2,891,550	6.4	5,790,694	21.2
A	18,947,065	21.1	12,218,600	22.5
C	1,954,999	4.3	6,987,195	25.7

interrelationships among aspects of vocational behavior, the personality types and career membership. In general, the research has supported what appears to be a very logical classification scheme.[50]

Holland reviewed the evidence from more than one hundred studies with respect to the usefulness of his theory and its classification scheme.[51] The studies indicate that the classification scheme organizes people into homogeneous groups possessing similar traits, competencies, interests and aspirations.[52] Holland and his associates applied the classification to a national sample of retrospective work histories to test its predictive efficiency.[53] He found that over five and ten year intervals, the percentages of people remaining in the same main categories were quite high (77.3 and 74.2 percent respectively).[54] Furthermore, in the case of men at least, level of education, income, and prestige was predictable from the initial occupational code.[55] Holland summed up the evidence on his theory: "Taken together, the application of the classification to both representative and unrepresentative populations has yielded relatively homogeneous groups that behave according to theoretical expectations, and the results are large enough to be of practical value".[56]

Implications for Women's Occupational Development

Holland's theory and the measures which have grown out of his theory have been criticized for their lack of applicability to women.[57] This criticism has not found fault with the theory in terms of its formal adequacy, empirical support, parsimony, generality, operational adequacy, logical consistency, etc.[58] Rather, the criticism has centered around the fact that the theory does such a good job of describing and predicting occupational types, including those of women[59] that it appears to be actually contributing to the perpetuation of the occupational status quo.

The instruments which have been developed to test the theory, most notably the Self-Directed Search (SDS), clearly demonstrate the fact that at present, girls and boys differ greately in their occupational potential. These differences are reflected in their differential interests and in their self perceptions of their competencies and abilities which would allow them to pursue various occupations. Thus, when compared with girls, boys display more interest (i.e., "like"), believe they are more competent at, and have higher ratings of their abilities in activities and occupations falling into the realistic, enterprising, and investigative categories. Girls, on the other hand, are more interested in and believe they have more competence at activities and occupations falling into the social, artistic and conventional categories. This is not to say that *all* boys are interested in activities and occupations in the RIE categories and *all* girls are interested in the ASC categories; nor it it true that boys limit their interests to only activities and occupations in the RIE categories and girls limit their interests to the ASC categories. In fact, there is considerable overlap in boys and girls expressed interest and self- perceptions of competencies and abilities across these categories. However, the highly significant mean differences tend to overshadow these commonalities.

These highly significant sex differences show up at every age from early childhood into adulthood. The theory does not say that this is how things "should be"; it merely describes what differences presently exist. In contrast to those who feel that describing these differences is tantamount to "prescribing" them, this research is based on the premise that in order to eliminate a difference it is necessary to first understand the nature and manifestations of that difference. Thus, by identifying at an early age the crucial dimensions of occupational potential on which girls and boys differ, one can begin to formulate appropriate strategies for intervention. In the absence of such knowledge, interventions aimed at maximizing girls' occupational potential would be at best "hit and miss".

Holland's theory has been criticized because it seems to "imply a high degree of freedom of choice and mobility that did not exist for women until recently".[60] In this sense, the theory has limited applicability to women because it does not adequately describe the environmental and socialization factors which impinge on women, the effect of which inhibits their freedom of choice and mobility. Although this criticism is accurate, the theory was not designed to address these questions, and therefore, should not necessarily be expected to do so. A comprehensive theory of women's occupational development should include these and other factors as explanatory variables. As already noted, however, Holland's theory is descriptive rather than explanatory.

The value of Holland's theory for purposes of this reasearch is that it describes in fairly specific terms how and on what dimensions boys and girls differ in occupational potential. In so doing it provides a model for the systematic description of girl's occupational potential at various points in their development. Moreover, it provides the instruments and the conceptual framework for measuring that potential. These measuring tools can then be used to evaluate the effectiveness of interventions. aimed at ameliorating girl's occupational potential. In this way, the theory and the instruments based on the theory, can contribute to the development of more effective interventions. In so doing, it contributes to the maximization of girl's occupational potential.

2. Theories of Occupational Development of Females

A. Zytowski's Theory

Zytowski's theory focuses on the duality of women's roles as homemaker and career women.[61] These two roles are considered to be mutually exclusive, and moreover, the homemaker role is seen as the primary one. The theory does not attempt to describe the career development of young women, but rather focuses on the sequential nature of women's adult roles. The theory therefore contributes very little to our understanding of the factors contributing to women's occupational development. Moreover, the contention that homemaker and career roles are mutually exclusive is no longer tenable. At present, more than 40 percent of all married women living with their husbands are in the labor force.[62]

B. Psathas Theory of Occupational Choice for Women

Psathas attempted to identify some of the factors which should be considered in a theory of occupational choice for women.[63] The major thesis of the theory is that sex role and occupational role are inextricably intertwined for women. While many factors are seen as ultimately related to work orientations and subsequent occupational decisions, the effect of these variables is always seen as mediated by the sex role.

Aspects of the sex role which mediate occupational entry for women include "the intention to marry, time of marriage, reasons for marriage, and husband's economic situation and attitude toward his wife's working".[64] While analagous aspects of the male sex role could be postulated, in no theory are they considered to be important mediators of men's occupational choice.

The intention to marry is seen as an all important overriding goal for most (perhaps all) women. It is primarily because of the desire to marry that Psathas feels young women acquire skills and qualities which would make them "more marketable" in marriage terms. Seeking "status enhancement", young girls try to acquire "whatever men in the same or higher social class regard as desiderata minima".[65]

> "In these terms, it becomes important to discover what are the imputed characteristics of the 'ideal' mate, what qualities or abilities the girl believes she ought to possess in order to attract such a mate, and, among other things, how she believes such qualities and/or abilities may be acquired."[66]

Psathas describes the "traditional" female role as one characterized by early marriage, early arrival of children and a homemaking 'career'.[67] For traditional women, work is seen as a temporary stage, and instrumental in its fundamental nature. The kinds of occupational roles performed, therefore, require little commitment and provide scant opportunity for self-fulfillment. Such a woman's decision to work or not to work is seen as determined, to a large extent, by her husband's income and the presence or absence of children.

Such an instrumental orientation towards work is most characteristic of women from low-income families.[68] For these women, early entry into occupations is absolutly essential to supplement the family income. To the extent that family finances permit a young woman to receive training or go to college, the probability of her having an exclusively instrumental orientation is reduced. Psathas speculates that it is only among those women who are not forced to work, that the sorts of factors postulated in the other theories to influence occupational choice come into play. For example, such hypothetical constructs as self-concept implementation and modal personality orientation are seen as irrelevant to the girl with the exclusively "instrumental" work orientation.[69]

Psathas identified a number of factors that may influence the likelihood of a married woman's performing in both the traditional and career roles.[70] The probability is increased to the extent that 1) her husband has a positive attitude towards his wife's working, 2) her husband shares in child-care and household tasks, 3) her children are of school age or older, 4) she continued to work after marriage, and 5) she has an advanced education, specialized training, or a high level of competence on a job.

The social class of a woman's parents, including their educational and occupational levels, is seen as a key determinant of her occupational choice. In particular, the father's occupation "provides a norm of prestige status and type of work (e.g., manual vs. nonmanual)".[71] With regard to the mother, the fact of her working, the type of work she does, and the timing and reasons for her working are all important considerations.[72] For example, if the mother worked only before and during the early years of marriage, and not at all after the birth of the first child, then a pattern of limited working may be the model. Reasons for mothers' working may include a career commitment, self-development, or for the money only. According to Psathas, these "constitute quite different, though not necessarily unrelated, motives, and present different images to the daughter concerning the role of work in a woman's life."[73]

In addition to the parents' occupational and educational backgrounds, Psathas considers the parents' values and value system to be of prime importance. Under values, Psathas includes "all value orientations held by the family and the social class in which they belong, together with reference groups and other role models perceived by the daughter as important in defining expectations attached to women's roles in their educational, occupational and marital aspects."[74] The families value orientations, and at a higher level of generality, the value setting which exists in the social class to which the family belongs, are postulated to underlie the choices made among alternatives. These include "any and all choices that are related to education, marriage, work and career patterns and which can be selected, influenced or determined by the parents."[75] Thus, Psathas theory places a great deal of importance on the social, economic, and value "setting" in which a woman's occupational "choice" is made.

A final factor in Psathas theory is "social mobility and mate selection".[76] In this context occupations are chosen not because of anything intrinsic to them or the woman doing the choosing, but because they can provide opportunities for contacts with eligible males in desirable (i.e., high status) occupations.

Harway, Astin, Suhr and Whiteley criticized Psathas' theory because of its traditional and middle-class perspective.[77] While the theory is accurate to locate women's occupational choice in the larger context of sex roles, they point out that it is inadequate because it does not analyze the nature of the relationship between occupational role and sex role. Moreover, while "Psathas presents the social forces that foist conventional choices on women", "he fails to deal with the variations in perceptions and the alternative or nontraditional options equally valid within his theory".[78]

Despite these valid criticisms, Psathas theory can make an important contribution to our understanding of women's occupational choice. While it provides no definitive answers, it does provide a context within which important questions can be posed.

First, it points to the inextricable link between sex role and occupational role for women. It then points to specific aspects of the sex role which mediate women's decision to work or not to work as well as the occupational choice itself. These factors should be considered when attempting to enhance women's work motivation or modify their attitudes towards specific occupations. In addition, Psathas makes a potentially useful distinction between women with instrumental and noninstrumental work orientations. His theory suggests that separate paradigms may be required to account for the occupational choices of women with each of these orientations.

3. Summary

While none of the theories reviewed here is adequate to describe or account for women's occupational development, they do suggest alternative perspectives from which to view this development. They are based on different assumptions and built on different paradigms.

Consequently, they ask different sorts of questions and focus on different key concepts. A synthesis of the theories' respective contributions can be useful in identifying the assumptions, questions and key concepts for this study.

The theories can be roughly divided into two broad categories, depending on how they view the occupational life of individuals: the structural view and the developmental view. The structural view analyzes occupations within some conceptual framework, and looks to see how various characteristics of individuals fit into this framework. Thus for example, Holland's theory organizes occupations into six categories, and points to the personality traits and ability patterns of individuals who enter those occupations. Theories with a developmental view emphasize the stages in the decision-making processes involved in occupational choice. They focus on aspects of individuals' experience which shape particular occupational orientations and lead to particular occupational choices. For example, Ginzberg conceives of occupational choice as a developmental phenomenon and identifies three stages to characterize individuals' occupational development. While Holland recognizes the importance of accounting for the development of different personality orientations, his theory does not represent a systematic attempt to do so.

Clearly, these two views are not mutually exclusive. While they differ in choice of emphasis, they are completely compatible and in fact, can be viewed as complementary to one another. For purposes of this study, the structural view is useful because it provides a conceptual framework for viewing the occupational world, and in particular, how the sexes are distributed across occupations.

The developmental view is useful for at least two reasons. First, it suggests that occupational development should be conceived of as a series of decision-making processes, with different sorts of decisions being made at successive stages of development. It points to the need for identifying the kinds of decisions girls are making at each stage in their occupational development which prevent them from actualizing their full occupational potential.

Second, the developmental view points to the shaping influence of various agents and experiences at successive stages of development. Among the most important factors identified are the girl's early childhood experiences with her parents, exposure to information about and opportunities for occupations, exposure to role models, opportunities for role playing, social class background, the occupational situation of the girls' mother (working vs. nonworking, type of work, and reasons for working) and the parents' value system.

The view that sex role and occupational role are inextricably intertwined (Psathas) applies equally well in both the structural and developmental perspectives. Thus, sex roles underlie the distribution of individuals across the spectrum of occupations and, to a large extent, determine the direction of individuals' occupational development. It is no accident that women tend to predominate in certain occupational categories, while men predominate in others. Nor is it accidental that women's occupational self-concepts coincide so closely with their sex-role self concepts (Super). That the sex role is a powerful force in the occupational development of women cannot be denied. If we begin by acknowledging its power, we may have taken the first step towards conquering it. Ultimately the goal is not to "conquer" sex roles, but rather to eliminate them as a basis for women's occupational choice.

Part Three. Sex Differences in Aspects of Occupational Development

This section reviews the evidence on sex differences in three aspects of occupational development corresponding to the three hypotheses of this study: self concept and sense of competence; motivational aspects of occupational development, including related aspirations, expectations, and attitudes; and acquisition of educational means to occupational attainment, including knowledge, training, and skills.

1. Self-Concept and Sense of Competence

> "A realistic sense of competency is probably as valuable a commodity as an educational enterprise can offer--to an individual, to the general society, and to the institutions into which skills will ultimately be transferred."[79]

Several of the major theories of occupational development have pointed to the self-concept as a key determinant of individuals' occupational choice and attainment. Super's theory, perhaps the leading theory of occupational choice, is based on the assumption that occupational choice is essentially a process of self-concept implementation. According to the theory, the self-concept is important because it channels occupational preferences, helps determine the kind of training for occupations undertaken, and ultimately, determines the degree of satisfaction experienced in one's chosen occupation.

To the extent that sex differences in self-concept exist and can be documented, they may contribute to our understanding of sex differences in occupational development. It is hoped that this understanding can then be translated into specific intervention strategies for maximizing women's occupational potential.

As with most concepts, the self-concept "contains a multiplicity of components and can be characterized in terms of numerous dimensions."[80] Perhaps the most important aspects of self-concept contributing to women's occupational development are self-esteem, self-consciousness, and self-perceptions about characteristics and abilities. The evidence on sex differences in each of these aspects is reviewed here.

A considerable amount of research has been conducted on the sex differences in self-concept which begin to appear during the adolescent period. Typically, this research has focussed on a "self-esteem" component and more recently on the dimension of "self-consciousness". Self-esteem" has been used to refer to "individuals' global positive or negative attitude toward him/herself".[81] Persons with high self-esteem "like" and are satisfied with themselves, while low self-esteem individuals are self-rejecting and self-dissatisfied. "Self-consciousness" refers to the salience of the self, or "the degree to which the self is in the forefront of attention, particularly in interpersonal interaction".[82]

Using measures based on these definitions, researchers have consistently found moderate sex differences in self-esteem and striking sex differences in self-consciousness. Thus for example, in an empirical study of nearly 2000 children and adolescents, researchers Rosenberg and Simmons found that girls were only slightly more likely than boys to have low self-esteem (a 5% difference) but were considerably more likely to have high self-consciousness (11% difference).[83] Moreover, while the sex difference in self-esteem remained relatively stable over time, the divergence in self-consciousness increased sharply during the adolescent period.

The girls' greater degree of self-consciousness was manifested in their being more concerned about being well-liked, more vulnerable to criticism, more concerned with promoting interpersonal harmony, and overall, more "people-oriented" than the boys. For example, in the interests of promoting interpersonal harmony, the girls were more likely than the boys to report that they smiled when they were not happy and acted nice to people they didn't like. In general, the data suggested that adolescent girls are considerably more sensitive to the opinions of others when compared with adolescent boys.

These findings are significant in terms of girls' occupational potential because they point to a crucial dimension on which adolescent girls and boys begin to diverge, and which may underlie females greater attraction to "people-oriented" occupations (e.g., social work, teaching, nursing). As Rosenberg and Simmons pointed out, "The people-orientedness of girls is functional to the current social distribution of sex roles"[87] (and occupations).

In contrast to these findings, the researchers found that girls were significantly less likely than their male peers to be concerned about achievement and competence.[85] They found that while girls are becoming more "people-oriented", boys are becoming more interested in "the use of abilities" or "extrinsic rewards, such as money, prestige, and security".[88]

Thus, even at an early age, girls are more likely to stress the importance of being well-liked, whereas boys emphasize competence, achievement, and external symbols of occupational success. That these differences increase dramatically during the adolescent period points to the possibility that early adolescence should be considered a "critical period" in the formation of girls' occupational potential.

It is less clear whether and to what extent the rather small differences which have been found in overall self-esteem may be contributing to women's inferior occupational attainment. To some extent, the sex differences in self-esteem probably reflects girls' incorporation of society's evaluation of women's role as relatively inferior to mens'. There are at least three steps involved in this process. First, the girl must become aware of society's evaluation of women's role vis-à-vis men's. Second, she must "own" women's role as appropriate or desirable for her to assume. Third, she must translate her understanding of society's generalized devaluation of women to a self-devaluation, or into a loss in self-esteem.

If all three of these steps have taken place, it is highly probable that the girl will also have incorporated society's views about the "appropriateness" of various occupations she may wish to pursue. The prediction emanating out of this line of reasoning is that there will be a significant correlation between girls with low self-esteem and low occupational aspirations. However, such a model cannot be expected to explain the nature of this relationship or the direction of causality. Thus, anyone of the following models may be operating:

1) awareness of sex roles → opinion of women as inferior → lowered self-esteem → lowered occupational aspirations

2) awareness of sex roles → opinion of women as inferior → lowered occupational aspirations → lowered self-esteem

3) awareness of sex roles → opinion of women as inferior → lowered self-esteem
→ lowered occupational aspirations

It is likely that all three models are operating at some time and for some individuals. There are probably many girls for whom the adoption of an opinion that women are inferior leads to a lowering of self-esteem, and this triggers a lowering of their occupational aspirations. Other girls may have a similar attitude, adopt lower occupational aspirations, and then lower their self-esteem as a consequence of these lowered aspirations. A third group of girls may manifest a simultaneous lowering in self-esteem and aspirations. Moreover, some girls may follow one of these paths over one period of their lives and another path at another time.

Research on the relationship between self-esteem, self-concept implementation, and occupational choice suggests that the picture is even more complex. Korman (1966) hypothesized that self-esteem (defined as the similarity between the self- and ideal woman concepts) acts as a moderator variable in the relationship between self-concept implementation and occupational choice, such that the degree of congruence between self-concept and chosen occupation is greater for high self-esteem individuals.[89] Korman found support for this moderator relationship in terms of perceived personality characteristics, perceived important needs, and perceived abilities.

A second study by Oppenheimer (1966) also found that self-esteem was positively related to the degree of similarity between self-concepts and occupational preferences.[90]

Mary Sue Richardson (1975) investigated the relationship between self-concepts and occupational role concepts in the career orientation of college women.[91] Basing her hypotheses on the findings of Korman and Oppenheimer, she predicted that women might be more oriented toward the role they perceive as most similar to themselves (i.e., career or homemaking) if they are also characterized by a high level of self-esteem. Like Korman, she defined self-esteem as the similarity between the self- and ideal woman concepts.[92]

Richardson's findings supported the hypotheses for career oriented women but not for homemaking oriented women. Thus, a high level of self-esteem strengthened the relationship between self-career congruence and career orientation but did not result in a low level of career orientation among women with high self-homemaker congruence. Richardson concluded that this differential influence of self-esteem makes sense because high self-esteem probably acts to facilitate college women's ability to deviate from traditional roles. In addition, women with high self-esteem are not as likely to reject the possibility of working even though they are attracted to the homemaking role.[93]

A study by Marion Asche (1974) investigated the interrelationships among three aspects of self-concept and one occupational construct in a group of post-high school vocational-technical students.[94] The purpose of the study was to test the generalizability of the construct of self-implementation in vocational decision-making to populations of males and females, students aspiring to technical as well as skilled level occupations, and to low and high self-esteem individuals.

The three self constructs were the "general self-concept", "the vocational self-perception", and the "ideaal self-concept".[95] The occupational construct was the "typical worker perception", defined as "the view that an individual has of the typical worker in his chosen occupation".[96]

Among the many significant findings, several are relevant to this discussion. First, Asche found that female vocational-technical students of both high and low self-esteem perceived the typical workers in their chosen occupation to be more congruent with their ideal self-concepts than with their general self-concepts. These differences were not found for males, of either high or low self-esteem.[97]

Second, Asche found a consistent tendency for female vocational-technical students to rate typical workers in their chosen occupation higher than they rated themselves. Again, this difference was not found for male students.[98]

Asche concluded that "there is sufficient evidence of relationships between self and occupational constructs in the vocation-technical student sample to support the construct of self-implementation among these students".[99] Moreover, she concluded that "the most fruitful avenue of research, and one of the most pressing problems for career education programs to address, is the apparent differences between male and female perceptions of self and occupational contructs".[100]

In comparison to the self-esteem and self-consciousness components of self-concept, relatively little attention has been paid to sex differences in perceptions about characteristics and abilities. Much of the evidence on these differential self-perceptions comes from studies using the Rosenkrantz et. al. (1968) Sex-Role Questionnaire.[101] In this paradigm, individuals' self-concepts are looked at in relation to their concepts about men and women in general, or of ideal men and ideal women. The purpose is to determine the degree of congruency between individuals self-attribution of characteristics and abilities and their attribution of characteristics and abilities to same- and opposite-sex individuals. In this sense, it is more a measure of individuals' self-perceptions of their masculinity-femininity than a measure of self-concept per se.[102]

Studies using this paradigm have demonstrated the existence of pervasive and persistent sex-role stereotyping from early childhood into adulthood.[103] Moreover, the studies have consistently revealed that both males and females incorporate these stereotypic perceptions about men and women into their own self-concepts.[104] Items which tend to be attributed to males, and by males to themselves typically reflect a "competency" cluster, including such items as "objective", "logical", "skilled in business", and "active".[105] A relative absence of these traits characterizes the stereotypic perception of women, as well as women's perceptions about themselves. Relative to men, women are perceived and perceive themselves as more subjective, illogical, unskilled, and passive.[106]

In contrast, items which tend to be attributed to females, and by females to themselves reflect an "expressiveness" cluster, including such traits as warmth, tactfulness, and concern about others feelings.[107]

Grace Baruch administered a slightly modified version of the Sex-Role Questionnaire to fifth and tenth grade students, and found the same sort of stereotyping and differential self-perceptions.[108] Significant differences were found, however, in the degree to which these stereotypic views were held at the different ages.[109] The fifth graders perceived themselves as less lacking in the masculine traits relating to competence than adult women. In addition, fifth graders were less likely than tenth graders to stereotype both adults and themselves.

Another recent study by Grace Baruch (1976) investigated some of the antecedents and correlates of girls who perceive themselves as competent.[110] Basing her conclusions on a sample of white, middle-class fifth- and tenth-grade girls, Baruch found a positive relationship between self-esteem and self-perceptions of competence (significant only for the tenth-grade girls). In addition, Baruch found that girls who have high perceptions of their competence tend to have low self-evaluations on the "consideration-restraint" dimension (i.e., kindness, neatness, obedience). Baruch interpreted these findings by pointing to the high value that our culture places on work-related achievement and the relatively low value placed on the wife and mother role. Given such values, "it is difficult for girls to develop high self-esteem unless they perceive themselves as possessing such traits as assertiveness, independence, and competence".[111]

A study by Ruth C. Wylie (1963) examined children's estimates of their school work ability as a function of sex, race, and socioeconomic level.[112] The subjects were 823 boys and girls in grades seven, eight, and nine. Three separate estimates of their ability to do schoolwork were made, and IQ was used as a rough external criterion of this kind of ability. The important distinction between ability and performance was explicitly conveyed to the children by telling them: "By ability we don't mean necessarily how well you actually do your school work but rather how well you could do school work if you tried your best." The results indicated that junior high school girls self-evaluations of their ability are much lower than their actual abilities would indicate.

As part of her Ph.D. dissertation, Rita Pengelly (1974) compared the academic self-estimates of adolescent males and females.[113] She based her findings on a cross-sectional sample of 1577 adolescents, representing a ten percent random sample of the public secondary school population of a major midwestern city. On a measure of academic self-estimate whereby students were simply asked to rate themselves on their academic ability, no significant differences were found between the sexes at any grade level. This finding is contrary to those of other researchers who have found that girls have more negative self-estimates of academic ability than boys.

Astin, Harway, and McNamara (1976) reported data on sex differences in college students perceptions about their characteristics and abilities.[114] The data comes from the Cooperative Institutional Research Program (CIRP), an ongoing study being conducted jointly by the American Council on Education and the University of California at Los Angeles. CIRP presently collects data from all entering freshmen at more than 600 representative institutions.[115]

These data indicate that college women rate themselves high on "artistic ability, cheerfulness, understanding of others, writing ability, and sensitivity to criticism", whereas men rate themselves high on achievement-oriented qualities.[116] These include "intellectual self-confidence, originality, mathematical ability, public speaking ability, and leadership".[117]

Interesting race differences were also found. Black college students tended to give themselves lower self-ratings than whites on academic ability, mathematical ability, mechanical ability, and, to some extent, originality. Black women were less likely than white women to see themselves as outstanding in artistic ability and mathematical ability. Conversely, Black women were more likely than white women to rate themselves high on drive to achieve, intellectual self-confidence, and social self-confidence. Compared with Black men, Black women were more likely to rate themselves high on drive to achieve but were less likely to feel they were above average on leadership, mathematical ability, mechanical ability, and intellectual or social self-confidence.[118]

On the basis of these data, Astin, Harway, and McNamara concluded that "women in general have a less favorable view of their own academic and intellectual abilities than college men do".[119]

A recent study by Tolor, Kelly and Stebbins (1976) sheds light on one behavioral manifestation of high and low self-concepts for women.[120] The study addressed the question of how the attitudinal dimensions of sex-role stereotyping and self-concept relate to differences in assertiveness. In a sample of undergraduate students, the study found that assertiveness is positively related to self-acceptance in both sexes. In addition, women who are low in sex-role stereotyping were found to be significantly more assertive than men low in sex-role stereotyping, and women low in sex-role stereotyping had more positive self-concepts than men low in sex-role stereotyping. The authors interpreted these findings by suggesting that it takes an unusual woman, "one who is more expressive than men and one who perceives herself more positively than men, to extricate herself from the restrictive influences of sex-role stereotyping".[121]

Self-perceptions about appearance is a final important aspect of self-concept in which sex differences have consistently been found. In one such study, researchers Kathleen Musa and Mary Ellen Roach investigated the relationship between adolescents' attitudes about their appearance, personal adjustment, and sense of personal worth.[122]

Self-evaluation of personal appearance was measured by comparing each subject's self-evaluation with the same subject's evaluation of his or her peers. Personal adjustment was measured with The Personal Adjustment half of the California Test of Personality, a paper and pencil instrument widely used in psychological testing. The test is designed to measure six components of adjustment: self-reliance, sense of personal worth, sense of personal freedom, feelings of belonging, withdrawing tendencies, and nervous symptoms. The sense of personal worth component of the test was used as a measure of "Total Self Concept".

Subjects for the study were 202 high school juniors attending school in a middle-sized midwestern industrial city. Most of these came from families whose socioeconomic status was lower-middle class or lower.[123]

The findings indicated a significant relationship between girls' (but not boys') self-evaluation of personal appearance and personal adjustment. In addition, the researchers found that a larger proportion of the girls than the boys rated their appearance lower than they rated their peers' appearance, and a much larger proportion of girls desired appearance changes. For example, while about 44 percent of the boys were sufficiently satisfied with their appearance that they desired no change, only 12 percent of the girls had no desire to change anything about their appearance.[124] Thus, girls simultaneously rated themselves lower on their appearance and were more negatively affected by their perceptions about their appearance than were boys.

The researchers interpreted these findings as reflections of the differential societal emphases placed upon males' and females' appearance.[125] Gregory Stone (1962) presented evidence which suggests that this difference in emphasis on appearance for boys and girls begins quite early in the socialization process, "little girls learn that dresses and 'being pretty' are sources of attention-getting, whereas boys learn that it is not 'masculine' to be over-concerned with appearance."[126] Thus these differences are well-developed by adolescence.

In sum, the studies reviewed here indicate consistent and significant sex differences in self-concept, regardless of the dimension of self-concept looked at, the measurement instrument used to assess it, or the characteristics (e.g., age, SES) of the subjects in the sample. The greatest sex difference appears to be along the dimension of self-consciousness, which also manifests an increasing disparity during the adolescent period. It was suggested that girls greater self-consciousness may be one factor underlying their greater attraction to "people-oriented" occupations.

Although the evidence on sex differences in self-esteem has not been as consistent, it is an important variable to consider inasmuch as low self-esteem clearly exerts a restrictive impact on some women's occupational aspirations and expectations. Thus, overall sex differences may cancel each other out, but women with low self-esteem are nevertheless inhibited by it from fulfilling their potential. Moreover, research suggests an interaction between level of self-esteem and occupational choice as a process of self-concept implementation.

While there is not a tremendous amount of research evidence, that which does exist suggests large and consistent sex differences in perceptions about characteristics and abilities. Males see themselves in terms of "competency" related attributes, while females see themselves as being more "expressive". Males rate themselves high on achievement oriented qualities, females rate themselves high on artistic and socially oriented characteristics. Finally, evidence was presented to show that self-concept is more than just an attitude or a perception: it also has important behavioral manifestations and ramifications, e.g., assertiveness.

2. Motivational Aspects of Occupational Development: Aspirations, Expectations, and Attitudes

For purposes of this study, "motivation" is defined as "The desire one has to move in a certain direction and with a particular purpose."[127] It is being used here in a general way as a subsuming hypothetical construct. It includes all those factors which are psychological in nature, internally generated, and which have the effect of restricting women's occupational potential. Three broad categories of such factors can be identified: aspirations, expectations, and attitudes. Evidence regarding sex differences in each of these aspects is reviewed here.

It is assumed that each of these factors contributes to the lowering of girls' motivation to aspire to the full range of occupations, and in so doing, places limits on their later occupational attainment.

a. Aspirations

In her recent Signs article, "Work aspiration of women: False leads and new starts", Judith Long Laws provided a fresh perspective on the literature on woman's occupational aspirations.[128] Criticizing previous work on the topic as "stagnant and unimaginative",[129] she pointed to two types of flaws characteristic of this research. First, aspiration has been looked at too often as a "static entity", rather than one governed by "lawful but dynamic factors".[130] "Work aspiration . . . is usually treated as a discrete event, like the menarche, which occurs at some time in adolescence and never again. From this inadequate conceptualization derives a research methodology which further reifies what is in reality a complex and dynamic motivational entity".[131]

The second flaw is partly the result of the first. Since occupational aspiration has been considered a discrete event which occurs relatively early in life, the environmental contexts in which it may fluctuate have too often been ignored. While "the context of information and incentive should always be remembered when speaking of aspiration", the reasearch has focussed almost exclusively on the static attributes of individuals in those environments.[132]

Rather than "mere oversight", Laws views these gaps in our knowledge as "the result of systematic errors having their roots in specific sociological and psychological traditions".[133] She identified a number of interrelated myths and misconceptions which underlie traditional perspectives on the topic. Two myths in particular operate in tandem to defeat empirical inquiry".[134] "The myth of the heroic male professional" assumes that all workers are characterized by zeal for their work and internalized work motivations. Even though research on working men demonstrates that this myth does not describe either the motivation or the behavior of the great majority of working men this model is often invoked as a context for comparison with working women.[136]

"The myth of female motivational deficit" emphasizes women's "lack" of "career commitment", "an undefined but honorific term usually associated with the myth of the heroic male professional".[137] Laws points out that the concept of "career commitment" itself would probably be unnecessary if we fully specified the conditions that facilitate and impede occupational entry and movement. Moreover, if there were a valid psychological entity operating which can be called "career commitment", Laws points out that it would most likely be attributed to women, "who must overcome obstacles to attain the desired state", rather than to men, "for whom all the material conditions conduce to occupational attainment".[138] Laws draws a parallel between this view of a motivational deficit in women and the theories of the sixties which attempted to "account" for blacks' "inferior" occupational attainment by invoking various hypotheses related to deficiencies in motivational aspects of blacks' personalities.[139]

Laws divides the research on women's occupational aspirations into two broad categories: prospective studies of occupational choice and research on women's occupational histories. The findings from prospective studies "are totally inadequate, conceptually, to tell us anything about such motivational phenomena as choice or aspiration".[140] They are viewed as inadequate largely because they fail to go beyond the simple recording of expressed preferences at a given point in time. They do not attempt to determine the antecedents of the preferences, by asking such questions as: how do occupations come to be perceived as options; how are options eliminated from consideration; and how do occupations become inbued with attractiveness and unattractiveness. In summarizing this literature Laws states: "After more than thirty years of research the question of the formation of occupational aspiration remains virtually pristine."[141] The studies are "at best" nothing more than studies of occupational "intention". They should be viewed as "a reading of the information and incentives perceived by young persons at a point in time". "The respondents reproduce the maps they have learned; we know nothing of what it means."[142]

Studies on women's occupational histories are either cross-sectional comparisons of women presently in the workforce, retrospective or longitudinal studies. These studies show that occupational "preferences" are not necessarily translated into actual occupational behavior. Other determinants of occupational outcomes are at least as important and should be given more attention. For example, "contemporaneous determinants of work motivation" should be considered, including the motivational effects of discrepancies in incentives provided for male and female workers. Likewise, "social factors in work motivation" should be considered, including such social psychological phenomena as "relative deprivation" and judgments of (in)equity.[143]

Laws assessment of the aspiration literature can provide a context within which to consider individual studies. Granting the limitations that Laws so eloquently describes, what do we know about girls' occupational aspirations and how do they differ from those of boys at the various stages of development?

A review of the literature on occupational aspirations reveals that while there are many ways of conceptualizing it, there has been no systematic attempt to do so. Thus, studies may refer to occupational "preferences", "choice", and "interests" just about interchangeably. A whole other set of studies looks not at women's preferences or choices among occupations, but at the factors influencing and the characteristics associated with the decision to enter any occupation at all. Most of this literature has been concerned with the "home-career" conflict and its resolution (e.g., Hoyt & Kennedy, 1958; Farmer & Bohn, 1970; Harmon, 1970; Rossi, 1965; Rand, 1968; Wagman, 1966). These studies are discussed in the next section on "attitudes". A third group of studies attempts to identify background and personality characteristics of women entering nontraditional or "role-innovative" occupations (e.g., Tangri, 1970; Almquist, 1969; Karman, 1973; Cardascia & Morgan, 1974; Levine, 1969; Nagely, 1971).

Studies falling in the first category, i.e., preferences among occupations, reveal systematic sex differences from the earliest ages through adulthood. The studies vary considerably in methodology, e.g., open-ended questionnaires, multiple-choice questionnaires, rank-ordering of occupations, personal interviews, etc. have all been employed. Regardless of methodology, however, the studies show that girls restrict their occupational preferences to a much narrower range than boys.

Looft (1971) asked first and second grade boys and girls, "What do you want to be when you grow up?".[144] In response to this question, boys nominated 18 different categories, while girls only named eight. In fact, more than three quarters of the girls named either nurse or teacher as their choice, while boys named a wide range of occupations, including doctor, dentist, scientist, pilot, astronaut, policeman and football player. Interestingly, several girls responded that they would be mothers, whereas not one boy said he would be a father. These results were corroborated in two recent studies. Siegel (1973) found that second grade boys chose twice as many occupations as girls, and the sexes exhibited virtually no overlap in their "most desirable" and "least desirable" choices.[145] A recent doctoral dissertation by Franken (1976) had similar findings, and suggested that boys begin naming a greater variety of occupations sometime between preschool and second grade.[146] O'Hara found the same pattern among fourth, fifth, and sixth grade children. Only four occupations - teacher, nurse, secretary, and mother - accounted for fully two-thirds of the girls' occupational choices.[147] Nelson found a similar pattern among students in grades 3, 5, 7, 9, and 11.[148] He concluded that sex is the most important determinant of students' reactions to various occupations.

Not only is the range of occupations restricted in number, but girls at all ages between 9 and 17 choose lower ranking occupations than boys of the same age.[149] Psychologist Rosalind Barnett examined the relationship between occupational preferences and occupational prestige in more than 2,500 students ages 9 through 17. Barnett hypothesized that females learn early to avoid high-prestige occupations and that this accounts, at least in part, for women's underrepresentation in prestigious occupations.[150]

As a part of a lengthy questionnaire, students were asked to read a list of 24 occupations and to select the two they would most and least prefer to enter. When the correlations between occupational preference and prestige were compared for males and females, a significant sex difference was found. The data showed that prestige is much more highly correlated with preference among males than among females (e.g., at age 9, r=.39 for boys and r=0 for girls). In addition, the strength of this relationship increases with age for males, but not for females.[151]

Conversely, Barnett found a positive correlation between occupational aversion and prestige for females but not for males. For example at age 12, the correlation between occupational aversion and prestige was .33 for females and -.22 for males.[152]

On the basis of these data, Barnett concluded that "women may be underrepresented in prestigious occupations not because they opt for such roles and are thwarted but rather because early in their development many women learn not to aspire to such positions".[153] Thus, Barnett sees these patterns as reflections of the internalization of external barriers, rather than the result of the external barriers themselves.

A recent study by Homall, Juhasz, and Juhasz (1975) examined the vocational aspirations of college women and found support for such an internalization interpretation.[154] Freshman and senior college women were asked to rank ten selected occupations three times: in terms of prestige, personal preferences and a male figure's preference (e.g., their husbands). A striking difference was found between women's perceptions of prestige for themselves in comparison to the prestige they attributed to a male figure.[155] In addition, a cross-sectional comparison of freshman and senior level women suggested that there is a significant decrease in the importance of money and prestige as a factor in career choice from the freshman to the senior years.[156]

Sex differences have been analyzed not only in terms of the diversity and rank (prestige) of occupational choices, but also in terms of the central characteristics of the occupations themselves. One of the earliest of such studies was conducted by Lehman and Witty in 1946. They found that girls preferred sedentary jobs, jobs involving aesthetic interests, and personal service fields such as teaching. These are contrasted with boys preferences for jobs involving travel, physical activity and giving orders.[157]

Numerous studies confirm that these differences have continued to persist for more than three decades. A study by Kirchner and Vondracek(1973), for example, documented these same trends among 3, 4, and 5 year old children.[158] Studies based on Holland's theory of vocational choice demonstrate the divergence in the occupational aspirations of boys and girls from the fifth grade through adulthood. By the fifth grade, girls are already aspiring to social occupations most (e.g., teacher social worker) and realistic occupations least (e.g., skilled trades).[159] The same sort of pattern characterizes college student and adult preferences, with women overwhelmingly choosing social, artistic, and conventional occupations while men choose investigative, realistic, and enterprising occupations.[160]

As Laws pointed out, these sex differences should be construed as differences in occupational "intention". They signify the application of consensually agreed upon and learned principles about occupational sex-segregation at the level of the individual. Regardless of how "stagnant and unimaginative" this research may be, the overwhelming consistency of its findings presents one of the most profound challenges of this century. It is hoped that the present study can begin to contribute to meeting that challenge.

Unfortunately, as with occupational aspirations, girls exhibit significantly lower educational and academic aspirations than do boys. A recent study by Wiggins found a consistent pattern of sex differences in the academic aspirations of ninth grade boys and girls.[161] On an adaptation of Gordon's (1966) "How I See Myself Scale", boys exhibited significantly higher "desired academic aspirations" than did girls.[162] A doctoral dissertation by Rita Pengelly (1974) found a similar pattern of lower educational aspirations in a sample of 1577 adolescent girls and boys. Pengelly's research suggested that the educational aspirations of girls begin to decline relative to those of boys as they move into later adolescence (i.e., late high school).[163]

b. Expectations

It is worthwhile to distinguish between occupational aspirations and occupational expectations insofar as each of these may contribute to the maximization or the inhibition of womens' occupational potential. There is empirical evidence to demonostrate that girls' preferences for occupations are significantly different from their occupational expectations (e.g., Powell & Bloom, 1962)[164]; usually this is in the direction of girls' expectations being lower than their aspirations. Thus, girls may be forced to lower their aspirations as a result of their diminishing expectations.

Conceptually, expectations are governed primarily by the individual's (subjective) assessment of probabilities, and may take into account such realistic considerations as labor market discrimination, geographical mobility/immobility, financial factors, etc. In contrast, aspirations represent the individuals' "pure" interests, desire, or preferences, without taking these factors into account. Because many studies have failed to make this distinction explicit, the literature is often confusing and occasionally misleading. A few studies have made this distinction, and their results are discussed below.

Looft's (1971) study consisted of two parts. In the first part, he asked a group of 6 - 8 year old children "What do you want to be when you grow up?". The children's responses presumably reflected their aspirations. In the second part, he asked "Now, what do you think you really will do when you grow up? What do you think you really will be when you are an adult?" Looft noted: "this question may have prompted the children to perceive a difference between what they wanted to be and what they realistically expected to be in adulthood."[165]

Interestingly, Looft found that a significantly greater proportion of the boys than the girls changed their initial response. While Looft attributed this difference to earlier "foreclosure" in vocational aspirations of girls in contrast to boys, an alternative explanation is that the girls simply had fewer alternatives to choose from; hence they were more likely to stick to their initial choice.

Looft provided a poignant example of how the process might work for girls. In response to the question about expectations, a girl who initially expressed a desire to be a doctor commented; "I'll probably have to be something else -- maybe a store lady".[166]

A study by R. Gene Wiggins (1973) examined differences in self-perceptions, aspirations, and expectations among ninth grade boys and girls.[167] This study focussed on academic, rather than occupational, aspirations and expectations. The study revealed that boys rated themselves significantly higher than the girls on both desired academic aspirations and expected academic aspirations.

Marvin Powell and Viola Bloom (1962) investigated the development of and reasons for vocational choices of adolescents through the high school years. A questionnaire was adminstered to 929 high school students in the tenth, eleventh and twelfth grades in a small metropolitan school district. Occupational aspirations were ascertained by asking the question: "What occupation would you like to enter assuming that you have financial resources, ability and freedom of choice"?[168] In this way, these researchers made their assumptions about aspirations quite explicit.

In response to this question, the boys named occupations in more than 50 different fields. The occupation receiving the highest level of interest was engineering with 23% of the boys choosing this field. Occupations on the skilled labor level included those of electrician, carpenter, television serviceman and automotive mechanic. In contrast, the girls named only 35 different occupations. Among the most preferred occupations were office work (22%), teaching (15%), and nursing (14%). These three were chosen significantly more often than all other occupations. The fourth in rank was that of airline hostess (4%). Some of the other vocations named were those of journalism, modeling, dramatics, fashion designer, interior decorator, physical therapist, lawyer, librarian and social worker.[169]

Comparisons with responses to the question "What occupation do you really expect to enter?" revealed significant differences between desired and expected occupations for both boys and girls. Among the boys, significantly more expected to enter clerical-sales, semi-skilled trades and the armed services than desired to do so. Among the girls, significantly fewer planned to enter professional occupations than desired to do so, and significantly more were preparing to enter clerical-sales level work. There was also a significant increase in the number of girls who expected to be a housewife but did not mention that they preferred to be one. About thirty percent of these girls were preparing to enter office and clerical occupations (compared with 22% who preferred this field), 17% teaching, 13% nursing, and 6% housewife.[170]

Overall, about 63% of boys and girls expected to enter the occupation they preferred. The proportion of students actually preferring the occupation they expected to enter increased with age, from 59% in the tenth grade to 67% in the twelfth grade.[171] This may be accounted for, at least in part, by cognitive dissonance resolution. As entry into a relatively undesirable occupation becomes more imminent, the students may have altered their preferences to coincide more closely with their expectations.

A third part of Powell and Bloom's study focussed on the students reasons for not entering their desired occupations. Among the boys, the most important reasons given were (1) an interest in the work they planned to enter (18%), (2) undecided as to the type of work they will enter (16%), (3) the occupation they are to enter is the choice of their parents (11%), (4) the decision to enlist in the armed services immediately (11%), (5) inadequate finances for the preparation needed (8%), and (6) ability for the work they are to enter (6%).[172]

The girls named many of the same reasons for not entering their most preferred occupation, but placed them in a different order of importance. While inadequate finances ranked fifth in the boys list of reasons and only 8% of the boys mentioned this, it ranked first among the girls, with more than 15% of the girls mentioning it as a reason. While none of the boys mentioned marriage as a reason for not entering their desired occupation, 13% of the girls did so. Similarly, while only 3% of the boys mentioned the preparatory work necessary for their desired job as a deterrent, 13% of the girls did so. While 18% of the boys mentioned interest in their expected occupation as a reason for choosing it, only 10% of the girls gave this reason. Interestingly, more girls than boys (9% vs. 6%) gave ability as a reason for choosing their expected occupation, and more girls than boys (6% vs. 3%) mentioned lack of ability as a reason for not choosing their desired occupation.[173]

A fourth part of this study was concerned with the motivational forces underlying occupational choices. Subjects were asked to state why they selected the occupations they named. Comparisons of boys and girls responses to this question reveal considerable differences in the motivations they have for choosing occupations.

While interest in the work is the most important reason given for both boys and girls, this reason is significantly more important for boys than for girls (36% vs. 27%). Girls place much more importance on an interest in people (15% vs. 3%) and a desire to be of service to others (17% vs. 5%). While girls are more influenced by the desire for security (12% vs. 6%), boys are more influenced by the potential for personal advancement (7% vs. 4%).[174]

In the fifth part of the study, subjects were asked to name their ultimate goal with regard to their vocational objectives. In response to this question, about 8% of the girls and none of the boys named the desire to marry and have a home and children. Other differences were also found but were not reported in sufficient detail to be discussed here.[175]

In the sixth and final part of the study, subjects were asked: "What factors do you consider of importance in a vocation?" A comparison between what the boys and the girls consider as important again revealed several differences. The boys placed significantly more emphasis on the financial aspects of an occupation (13% vs 9%), and knowledge of the job (9% vs. 3%). Girls placed more emphasis on friendliness (5% vs. 3%), benefitting others (4% vs. 1%), and happiness (5% vs. 3%).[176]

Some of Wylie's major findings were corroborated in a recent study by Rosenberg and Simmons (1975). They found striking sex differences in occupational expectations beginning in early adolescence. Girls were reported to be much more likely than boys to expect to be no better than average occupationally.[177]

Slocum and Bales (1968) examined aspirations and expectations among college women. They found that although women are only slightly less desirous than men of a career in professional occupations, they had far lower expectations of actually working in such occupations.

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c. Attitudes

A considerable amount of attention has been devoted to examining some of the attitudinal variables that may act as barriers to maximization of women's occupational potential. By attitude is meant "the sum total of one's inclinations and feelings, prejudices or biases, preconceived notions, ideas, fears, threats, and convictions about any specific topic".[178]

A review of this literature by Virginia O'Leary discussed some of the major attitudinal barriers which may inhibit the expression of achievement-directed behavior in women.[179] O'Leary was primarily interested in identifying those barriers which prevent women who are already in the labor force from entering managerial level positions. She distinguished between factors internal and external to the woman herself. External factors include societal sex role stereotypes, male promoters' attitudes towards women in management, and attitudes towards competency in women. Internal factors include fear of failure, low self-esteem, role conflict, fear of success, and the perceived consequences and incentives for engaging in achievement-related behaviors. Clearly, both sets of attitudes must be modified for the fulfillment of women's potential. However, because this study focusses on modifying women's attitudes themselves, this review is limited to those attitudes falling in the "internal" category.

Aspects of the self-concept which may inhibit women from fulfilling their potential have already been reviewed. While both fear of failure and fear of success may contribute to some women's apparent reluctance to aspire to high level or nontraditional occupations, it is not clear that women, in general, manifest these fears to a greater extent than do men. A study by Kagan and Moss (1962) suggests that even if women and men have comparable levels of fear of failure, however, it is the women who are more inhibited by it from aspiring to high career goals.[180] That is, while Kagan and Moss did not find overall sex differences in fear of failure, they found a significant correlation between fear of failure in childhood and adulthood among female but not male subjects. O'Leary attributed this to sex differences in the socialization process, such that males receive more encouragement to develop appropriate "coping mechanisms" for dealing with failure.

The theoretical construct "fear of success" has received a tremendous amount of attention, both in the research literature and in the popular media, since it was first proposed by Matina Horner in 1968.[181] Horner hypothesized that women actually have a motive to avoid success which prevents them from achieving in a traditionally masculine context. The rationale for the theory stems from the observation that achievement is by its very nature out of role for women and can have negative consequences for them. For example, success may be linked in women's minds with fear of social rejection, and doubts about their femininity or even normality. Horner (1970) characterized the "successful women" as one who feels "anxious, guilty, unfeminine and selfish".[182] Maccoby (1963) also suggested that women who are successful tend to suffer from high levels of anxiety.[183]

The original research on which the theory was based indicated that fear of success is much more prevalent among women than men (62% compared with 10%, respectively).[184] Horner also found that women who were high in fear of success performed better alone than in competition, and women low in fear of success performed better in competition than alone.

A number of more recent studies have cast doubt on Horner's findings and collectively raise questions as to the validity of the fear of success construct. David Tresemer reviewed the findings of over 100 studies assessing fear of success and concluded that there are no sex differences in the extent to which fear of success imagery is evoked in response to a cue depicting an achieving female.[185] He also concluded that since the time Horner collected her original data (i.e., 1964), the proportions of fear of success imagery elicited by both men and women in response to verbal cues have decreased significantly. Moreover, Tresemer concluded that there are "few" correlates of fear of success, and that it is unclear what the relationship is between fear of success imagery and performance in different kinds of situations.

Moreover, the methodology that has typically been used to test the theory has met with considerable criticism. In particular, virtually all of the studies have used a projective technique, namely, a fantasy-based measure in response to a cue about a high achieving female. Use of this technique has raised questions as to the reliability of the scoring procedures, the ambiguity of the variables captured by the technique, and the generalizability of the findings to relevant behavioral dimensions.[186]

Among the numerous studies conducted on fear of success, a recent one by Kimball and Leahy (1976) stands out as particularly relevant to the present research.[189] The study examined the effects of developmental level and sex-linked course of study on fear of success in children. The sample consisted of 303 children between the fourth and twelfth grades.

The researchers hypothesized that there would be a significant increase in fear of success during the age range of 9 through 12. Their reasoning was based on the characterization of this period in the psychodynamic literature as a time of socialization within the peer society. They reasoned that there would be an "increasing ambivalence about competitive achievement because of the growing importance of peer group affiliation for both sexes".[188]

Second, Kimball and Leahy hypothesized that males and females in stereotypically gender-appropriate courses of study (e.g., female secretarial) would exhibit less fear of success than females pursuing success in a domain of achievement in which males compete (e.g., a college-preparatory program).

The researchers found partial support for both of these hypotheses. Fear of success imagery was found to increase between the fourth and the tenth grades and to decrease between the tenth and twelfth grades. The construct was related to sex only during high school, where it was found to be associated with the type of course being studied. Females in the sex-stereotypic secretarial course had the lowest level of fear of success, while 12th grade college preparatory females had the highest level.

While this discussion has treated fear of failure and fear of success as conceptually distinct, recent evidence by Jackaway and Teevan (1976) suggests that these are two dimensions of the same motive.[189] In a sample of 160 high school seniors of both sexes, these researchers found significant positive correlations between fear of failure and fear of success motives. These findings held up under conditions of both neutral and high competitive arousal.

These findings were interpreted by hypothesizing that fear of failure and fear of success are essentially equivalent motives for people whose affiliative and achievement needs are closely intertwined. Thus, for those individuals who equate social rejection with failure, fear of success is tantamount to fear of failure. Such tendencies are much more likely to characterize the need patterns of women than of men.[190]

Role conflict is a well recognized attitudinal barrier to maximization of occupational potential in women.[191] This discussion focuses on role conflict in its most general sense, and refers to all of the attitudes that women hold about the intrinsic role incompatibilities they are faced within our society. Three categories of such attitudes can be distinguished, corresponding to three basic role incompatibilities confronting women today: attitudes about the dual role of married women who work, attitudes towards the social, economic, and political equality of women, and attitudes about existing sex-role divisions in occupations and activities.

Traditionally, women's primary role in American society has been that of homemaker, and men's role has been that of "breadwinner". Consequently, many married women who work experience considerable conflict and concern about their desire to work and about the time they spend away from their homes at work. O'Leary noted: "They weigh the benefits of working against concern for the well being of their children and the nature of the marital relationship."[192] Research by Nye and Hoffman (1963)[193] and Siegel and Haas (1963)[194] documented the existence of such conflicts in adult women in the early 1960's.

A number of more recent studies have examined the development of attitudes about the dual role of women as homemaker and worker. A study was conducted by Entwisle and Greenberger in 1970 to investigate the attitudes of ninth graders towards women's roles.[195] The sample consisted of 270 boys and 305 girls who were ninth graders in seven schools of various socio-economic and ethnic composition in Baltimore. The study focused on attitudes about whether women should work, what kinds of jobs women should hold, and whether women are intellectually curious. In particular, the researchers were interested in how these opinions may vary as a function of social class, residential locus, and. sex.

The findings were based on responses to only three questions which were included as a part of a larger study on the relation between social class and cognitive style. Each question gave students a forced choice between two responses, and also had them indicate how strongly they felt about their answer. For example: "1. What do you think women should do?

______ It is not a good idea for women to work. They should devote themselves to their home and family.

______ It is a good idea for women to work. They don't have to devote themselves only to their homes and family.

Check how strongly you feel about your answer.

(very weak) 1 2 3 4 5 (strong)"[196]

Entwisle and Greenberger found a marked difference in opinion between boys and girls about women's roles, with boys consistently holding more conservative opinions. While both sexes were "decidedly on the negative side" for the question with regard to whether women should hold the same jobs as men, the girls were positive and the boys were negative with regard to the question of whether women should work at all. The girls were also more likely to feel that women are curious and derive satisfaction from problem-solving activities.[197]

Some interesting race and SES by sex interactions were also reported. The middle class girls held the most favorable views towards women working of any group of girls, and their view was markedly discrepant from their male classmates. While black boys were more liberal than white boys, the difference was found to stem from their willingness for women to work rather than from their willingness for women to hold men's jobs. The most liberal views on women holding men's jobs were found to be held by high IQ blue collar white students. In general however, middle-class whites were more liberal than blue-collar whites. A greater discrepancy was found between middle-class girls and boys than between blue-collar girls and boys, with the middle-class sex difference especially marked among the high IQ group. With regard to the last finding, the researchers noted: "Those girls with the most potential and desire for outside work have potential mates who are the most opposed to it."[198]

As a part of a 1974 study of the National Assessment of Educational Progress (NAEP) in writing, 4600 17-year old high school students were asked to write an essay from the following: "Some people believe that a woman's place is in the home. Others do not. Take one side of this issue. Write an essay in which you state your position and defend it."[199] About half of the student's responded that a woman's place is where she wants it to be, that it should be her choice whether to be a homemaker, career woman or both. About twenty percent said women should be allowed to work under certain conditions, such as if they do not have children. Nearly 30% said women definitely belong at home.

As with the previous study, more females than males felt women should have a choice about working. A total of 58% of the females said women should work wherever they want, and 41% of the males felt this way. Conversely, 37% of the males felt women belonged at home compared with 21% of the females.[200]

Interesting results came from an analysis of the reasons given for why women should stay at home. Nearly one-half of the 17-year olds felt women should stay at home, either categorically or under certain conditions. Although many reasons were given, the most frequently cited one was the women's obligation to raise children. This consideration was included more frequently by the females, especially those who felt all women should stay at home. Very few of the writers mentioned financial need as a circumstance under which women might work. Nearly three-fourths of the in-the-home proponents said women should remain at home to cook and clean house. One-fourth wrote that women should not work because they need to take care of their husbands. About 7% of all 17-year olds argued that women should remain at home for dogmatic reasons, such as "that's the way it is". Another 4% said women were incapable of working. Interestingly, nearly three times as many males as females used this argument (about 6% of the males compared with about 2% of the females).[201]

The results also indicated considerable variations by race and region of the country. The disparity between males and females was greatest in the Southeast where 26 percentage points separated the sexes. Only 35% of the males in the Southeast felt women should be able to make a choice, compared with 40% of the males in other regions. The females in the Eastern part of the country were the most likely to feel women should have a choice about what they want to do with their lives. About 60% of the women in the Northeast and Southeast felt this way, compared with about 50% in the Central and Western regions.[202]

Blacks were found to be slightly more likely to give "where she wants" responses and to have clear-cut opinions. Although 20% of the white students gave a conditional answer, only 15% of the blacks qualified their response.[203]

One additional result was of interest. Significantly more females than males wrote essays rated competent or better.[204]

Kaley (1971) studied attitudes toward the dual role of the married professional woman among a group of married professional men and women.[205] The sample consisted of 60 men and women affiliated with a university research organization and a social service agency. All of the respondents were college-educated or above, and almost all of them were white. The sample was selected on the basis of availability and was not presented as necessarily representative of all professional men and women.

Respondents were asked to indicate whether they agreed or disagreed with six items relating to aspects of the dual role of career women. For example, one item was "In general, the married, professional woman is able to adequately meet her responsibilities to both her family and career."[206]

The results indicated that men and women in the sample differed significantly in their attitudes on the married professional woman's ability to fulfill her home and career obligations and to meet her home responsibilities as successfully as the full-time homemaker. While the women had a positive attitude toward their dual role the men had negative attitudes. The investigator concluded that "negative attitudes toward the professional woman's dual role both outside the professional community and within it are an indication of why few women prepare themselves for and pursue professional careers".[207]

A developmental trend in attitudes about women's dual roles was suggested in a study conducted by Matthews and Tiedeman in 1964.[208] Based on a sample of 1,237 girls and young women, the researchers examined the relationship between attitudes toward career and marriage and life styles at different developmental stages. "Life styles" were represented by high school curriculum elected and plans for education, career and marriage during the decade ahead. These researchers found a drop in career commitment and an increased acceptance of marriage from junior to senior high school.

Matthews and Tiedeman also identified major themes that affect a woman's life style during the adolescent period. These were, in decreasing order of importance: (1) a consideration of the male's reaction to the use of her intelligence; (2) the struggle over the possible position of dominance of men at work and the "place" of women at home; (3) conflict between the demands of family and work on the time of a wife and mother; (4) dilemmas of timing in dating and marriage, and (5) general acceptance of the feminine role.

Lorraine Rand and Anna Miller conducted a developmental study on women's career and marriage attitudes and life plans in 1972.[209] They based their findings on a cross-sectional random sample of 180 women from junior high school, high school, and college levels. While a considerable degree of consistency in attitudes was found across the three developmental levels, their results also indicated that as young women develop, they become more liberal in their attitudes and desires about work.

A few studies have examined the development of attitudes towards the social, economic, and political equality of women. Greenberg (1973) administered a questionnaire to a sample of 400 students in each of grades 4, 6, 8 and 10 to examine their attitudes toward increased social, economic, and political participation by women. Students were asked to respond yes or no to a series of questions of the type: "Do you think that women in all countries of the world should have equal rights to men?"

Greenberg found that in all age and social class groups tested, females had consistently and significantly (at the $p<.01$ level) more egalitarian scores than males on the questionnaire. She also found that upper grade students (after grade 4 in males and grade 6 in females) were more likely to give egalitarian responses than lower grade students.

Analysis of males and females responses to individual items reveal that the greatest disparity is on the item: "Should more women be encouraged to become lawyers, judges, and senators?" with 82% of the females and 41% of the males responding "yes". The item "Is it better to be a man or a woman in the United States today? had intriguing results. Whereas 48% of the males felt it was better to be a male, only 22% of the females felt it was better to be a female. Fifty-nine percent of the females but only 40% of the males felt it was equally good to be of either sex.

The least disparity is on the item: "Do women become more easily upset than men?" Only 7% of the males and 15% of the females responded with an egalitarian "no" to this item. Interestingly, only one item was answered in a more egalitarian direction by males than by females: "Is it right that men should be expected to open doors and take off their hats for women if women have equal jobs?" Fifty-two percent of the males and only 32% of the females responded with a "no", which was considered the "egalitarian" response. Finally, 94% of the females felt that women are as intelligent as men but only 71% of the males felt this way.

A study of similar attitudes among adult women was conducted by the National Office of the B'nai B'rith Vocational Service.[212] By 1972, approximately 7,000 women were reported to have completed a questionnaire to assess their attitudes in nine general areas, including the importance of work, influence of home, and the major problems confronting women related to education and occupations. Among the preliminary results was a rather surprising difference between the married and single respondents in their attitudes towards equality for women. While about 63% of the married women felt that "girls and women should have the same rights and privileges and responsibilities as boys and men", only 36% of the single women felt this way. This result needs to be cooroborated in further research, particularly since it is counterintuitive.

Married and single respondents were in closer agreement on several other questions. For example, 68% of both married and single women replied "no" to the question: "Would you like to see a woman President of the United States in the near future?" In response to the question, "If you were to be reborn, would you choose to be a female?", 84% of single women and 92% of married women said "yes".

A recent study by Hershey and Sullivan (1977) suggests that attitudes about women's roles are part of a more general liberal-conservative dimension of political ideology.[213] These findings were based on survey data from two independent random samples of Indiana University students collected in 1974-1975. Findings indicated that those who score more liberal or flexible on several measures of sex-role attitudes are also very likely to hold liberal political attitudes.

As noted in O'Leary (1974), considerable research documents the existence of role conflict among women who are engaged in traditionally masculine occupations.[214] Among girls and young woman, this role conflict is reflected in their attitudes about sex-role divisions in occupations and activities.

A recent study by Shepard and Hess (1975) examined the development of attitudes toward sex role division in adult occupations and activities.[215] The sample consisted of about 30 males and 30 females in each of four age groups: kindergarten, eighth grade, college, and adult. Subjects were presented with a list of 43 adult occupations, and activities and were asked to indicate for each whether it "should be" performed by a male, female, or either. If 10% or less of the subjects in a group responded "Either" to a particular item, they were labelled "Conservative" with regard to that item. That is, those subjects were judged to be highly conservative in their attitudes toward that role and were considered "anxious to maintain the status quo". Conversely, if 60% or more of the subjects in a group responded "Either" to a particular item, they were labelled "Liberal" with regard to their views about that occupation or activity and were considered "anxious to see the status quo change".

The results indicated that overall liberality increased from kindergarten through eighth grade to college and then decreased in the adult sample. Kindergarteners of both sexes were found to be extremely conservative; females gave conservative responses to 23 out of 40 items and males responded this way to 20 out of 40 items. Furthermore, there was no item to which the kindergarteners responded in a "liberal" or egalitarian way.

By the eighth grade, females were significantly more liberal than males, and this difference persisted into adulthood. While eighth grade males gave "liberal" responses to only eight of the 40 items (20%), females responded this way to 20 out of the 40 items, representing an egalitarian attitude towards 50% of all occupations and activities represented.

Interestingly, males and females agreed (in terms of percentages responding "either") on the items "caring for children" (56% of males and females responded that "either" should do this), "cooking dinner" (76% responded "either") but strongly disagreed on the items "do dishes" (53% of the males but 71% of the females responded "either"), "do laundry" (47% of males and 68% of females), and "vacuum" 38% males and 62% females). Strong disagreement was also evident on the items "fight fires" (18% males and 47% females responded "either") and be President (32% males and 62% females responded "either").

Not surprisingly, the college students were the most liberal group. Nineteen out of forty items were responded to in an egalitarian way by college males; females responded this way to thirty out of forty items.

Interestingly, only 35% of the college females in contrast to 62% of the eighth grade girls felt that either a man or a woman should be President. Other prestigious occupations, such as lawyer, banker, and doctor, however, received highly egalitarian responses from college students of both sexes (e.g., 78% of males and females felt that "either" a man or a woman should be a lawyer).

Shepard and Hess compared their results with those of two similar studies which had been conducted in 1961 and 1972 respectively. This comparison revealed that attitudes generally have become considerably more liberal, particularly among females. For example, while 98.5% of subjects in Hartley's 1961 study rated fire fighting, car repairing, truck driving and piloting as exclusively male domains,[215] Shepard and Hess found that between 40 and 60% of eighth grade females felt this way.

Shepard and Hess concluded that while there has been a liberalization of attitudes among both sexes toward women entering prestigious occupations, and there has been some change in attitudes towards women entering traditionally male occupations such as truck driver, there has been little or no change in attitudes toward sharing of traditionally female roles. They noted that "Home care items are still seen as drudge work".[216] It can be added that males attitudes towards the sharing of household tasks seem to be particularly resistant to change.

One of the studies Shepard and Hess contrasted with theirs was that of Schlossberg and Goodman, conducted in 1972.[217] This study was designed to discover the degree to which elementary school children hold stereotypes about occupations based on sex. The differences between kindergarteners and sixth graders, boys and girls, and between two elementary schools at two different SES levels were examined.

Subjects were asked to respond to twelve drawings, representing work settings of six occupations traditionally considered feminine and six occupations traditionally considered masculine. The feminine occupations were those employing over a fourth of all employed women, namely, secretary-bookkeeper, household worker, elementary school teacher, waitress, and nurse. The masculine occupations were chosen because they were "prominent among those identified as fields that cannot be filled by men alone".[218] These included doctor, dentist, architect-draftsman, television-radio repairman, mechanic, and laboratory scientist.

In contrast to Shepard and Hess' study in which children were asked whether men and women "should" work in occupations, Schlossberg and Goodman asked the children to indicate if a man or a woman "could" work in each of the occupations. In addition, each child was asked, "What do you want to be when you grow up?"

A child's response was considered to be stereotyped when the child said that a man could not work in one of the feminine occupations, or that a woman could not work in one of the masculine occupations.

The results indicated that children of both sexes were much more ready to exclude women from men's jobs than to exclude men from women's jobs. In fact, women were considered unable to do men's work twice as often as men were considered unable to do women's work. Moreover, with few exceptions, the children selected occupations for themselves that fall within the traditional stereotypes for their sex.

A second finding related to the relative stereotyping of different occupations. A striking disparity was found between occupations in terms of the degree to which the children stereotyped them. For example, while one hundred percent of the lower SES sixth graders said a woman could not fix televisions, radios and cars, only 10% said she could not be a doctor. While seventy-six percent said a man could not be a housekeeper, only 5% said he could not be a teacher.

A third finding was that the low SES children held more stereotypes than the middle-class children. For example, in contrast to the above cited percentages, only 48% of the middle-class children felt a woman could not be an auto mechanic, and only 5% felt she could not be a doctor. The same pattern held up with regard to attitudes towards men's roles; 38% of the middle-class children said a man could not be a housekeeper, and none excluded men from teaching.

Finally, in contrast to the findings of Shepard and Hess, these researchers found no appreciable difference in the degree of stereotyping between kindergarten and sixth grade. However, they noted that the sixth graders in particular were responsive to the difference between the interviewers "could" and their perceptions of present-day sex stratification of occupations. For example, these students frequently expressed such comments as: "Sure, a woman could fix cars, but she wouldn't like it much".[219]

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In her Ed.D. dissertation, Lois Brooks investigated "The sex-role stereotyping of occupational perceptions by sixth grade students" (1973).[220] The sample consisted of 258 girls and 240 boys from ten Detroit schools of varying socio-economic and racial compositions. "The Brooks Occupational Survey" was used to assess occupational perceptions. Part I of this instrument lists 40 occupations of which 20 are male-dominated and 20 are female-dominated in the United States today. Subjects were instructed to indicate which occupations they felt men and women "can" and "cannot" enter. An open-ended questionnaire was also administered to explore occupational aspirations, perceptions of "success" for men and women, and the subjects' relationship with their families. The study also looked at intelligence, socio-economic status, and self-concept as possible mediating variables.

The results revealed a number of significant relationships. First, while the girls and boys had similar perceptions about the entrance of men and women into male-dominated occupations, they perceived differently concerning the entrance of men and women into female-dominated occupations. That is, boys perceived that men can enter fewer female-dominated occupations than girls perceived.

However, all students perceived that a greater percentage of men can enter female-dominated occupations than women can enter male-dominated occupations. The five occupations that both boys and girls agreed were the least appropriate for women were pilot, machinist, automobile mechanic, truck driver and carpenter. In contrast the least sex-stereotyped occupation for both sexes was mail carrier. Among the other male-dominated occupations that 50% or more of the subjects felt "women can enter" were the professions of dentist, lawyer, and architect.

Other findings related to socio-economic status, race and intelligence differences. The least stereotyped perceptions regarding the entrance of women into male-dominated occupations were held by white middle socio-economic sixth graders, while lower socio-economic whites displayed the least stereotyped perceptions regarding the entrance of men into female-dominated occupations. Black students displayed more stereotyped sex-role perceptions than white students, and low socio-economic black students displayed the most stereotyped perceptions of any other group. Intelligence level was related to knowledge of careers in terms of male-female labor market participation, and tendency to hold sex-stereotyped views. Low-average intelligence students displayed less knowledge, and more stereotyped perceptions than high-average intelligence students. High-average intelligence students showed the least occupational sex-role stereotyped perceptions of any other intelligence group.

While a small percentage of girls indicated a desire to enter male-dominated occupations, no boys indicated a desire to enter female-dominated occupations. A relationship was found between girls holding less occupational sex-role stereotyped perceptions and (1) plans to enter a male-dominated occupation, (2) perceptions of similar criteria for success for men and women, (3) going places alone with father, (4) being treated differently than her brothers and sisters by father, (5) closer to being first born; and (6) having fewer siblings.

Interestingly, while there was a relationship between high self-esteem and the absence of sex role stereotyped occupational perceptions for girls, no such relationship was found for boys. Finally, a relationship was found between girls with mothers employed in male-dominated occupations and aspirations to enter a male-dominated career.

Brooks concluded that sixth grade students are quite knowledgeable about the "appropriateness" of occupations for men and women in terms of labor market participation. "Sex-role stereotyping has indeed become well established by the end of elementary school".[221]

For her Ed.D dissertation, Marilyn Meyer studied "Patterns of perceptions and attitudes toward traditionally masculine and feminine occupations through childhood and adolescence" (1970).[222] A total of 132 boys and girls from grades 3, 7, and 11 of the Oshkosh, Wisconsin public schools were the subjects for this study. High and low socio-economic groups were about equally represented. The instrument used a "paired picture" technique. A series of pairs of pictures was presented to the subjects depicting a male and female worker engaged in the identical vocational activity. For each pair of pictures, subjects were asked to indicate which picture they liked the best, which of the people likes his or her job best, and which of the people made the best choice of a job. These three questions were designed to measure "vocational identification", "vocational interest", and "vocational appropriateness", respectively. The occupations were equally divided among traditionally feminine, traditionally masculine, and traditionally neutral occupations.

The major overall finding was that both boys and girls had strongly sex-stereotyped views about occupations. However, the way in which this manifested itself varied considerably as a function of developmental level. Both boys and girls in the third grade responded on the basis of the sex of the character depicted rather than on the basis of the work role or activity itself. The boys in the third grade were particularly likely to respond solely on the basis of sex -- they viewed the men as best liked in all occupations, the men as liking all occupations best, and the men as having made the best occupational choices, regardless of the sex-linkage of these occupations. On the basis of this finding, Meyer concluded that "It seems clear that boys and girls in grade three identify with male and female workers on the basis of their sex-rather than on the basis of their work role."[223]

By the seventh grade, subjects were no longer tieing their interest in an occupation to the sex of the individual depicted in the occupation, but rather to the "vocational appropriateness" of the role for the sex depicted. The eleventh grade students were even more likely to moderate their entire response pattern by the appropriateness of the worker for the particular sex-linked occupation.

Meyer also found that socio-economic status was related to views of sex-linked occupations, but only at the third grade level and only toward masculine occupations. That is, third grade students of low socio-economic status were likely to see masculine occupations as more neutral than other groups. Meyer accounted for this finding by noting that the lower-status third graders were more likely than the higher status third graders to have mothers who worked at masculine type jobs, such as running machines in a factory. "It then was highly possible that mothers who worked in the lower status had jobs which although traditionally masculine were seen as feminine by the girls."[224] She noted that no working mothers among all the high socio-economic status subjects held jobs in any fields other than in typically feminine sex-linked occupations. Meyer concluded: "It was quite clear that the high socio-economic subjects, particularly the girls, were introduced to the traditionally sex-linked occupational world before those of low socio-economic status simply by virtue of example."[225]

3. Acquisition of Educational Means to Occupational Attainment: Knowledge, Training, and Skills

a. Career Education, Vocational Education, and Practical Arts

There are numerous ways to conceptualize the relationship between education and occupations, and proponents can be found to support any of a number of such conceptualizations. The two most widely recognized conceptualizations are "career education" and "vocational education". Numerous definitions of these terms have also been proposed representing the spectrum of opinions and assumptions about the "appropriate" or "best" role of schools in preparing youth for their future occupations.

Dr. Charles Buzzell, Acting Deputy Director for Occupational and Adult Education, U.S. Office of Education, describes the relationship between vocational education and career education as "symbiotic", implying that while the two are closely associated, each does have unique aspects as well. Dr. Buzzell defined career education as

> ". . . a philosophy that encompasses the totality of educational experiences through which one learns about and prepares for work. Career education has many elements. Some are concerned with the world of work, how one finds out about jobs, and how one assesses personal competencies; and, yes, career education does encompass actual skill preparation."[226]

The assumption underlying the concept of career education was stated by Gordon Law: ". . . that self understanding, knowledge of the working world of adults, ability to make intelligent decisions regarding careers and opportunities for the development of vocational knowledge and skills are important goals of education."[227]

Both the Senate and the Congress have recently expressed support for career education, both in principle and in terms of financial support. The Senate report written to accompany Senator Claiborn Pell's Education Amendments of 1976 (S.2657) stated that preparation for the working world should be a basic part of any education program and that career education is an effective way to achieve that goal.[228] The Labor and Public Welfare Committee of the U. S. Congress stated that "the Congress finds and declares that preparation for careers should be a major purpose of education at every level and in every type of educational institution, and that it is in the Federal interest for every person to be exposed to the widest varieties of career options in the course of that person's education."[229]

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While the greatest emphasis is on K-12 career ed programs, the committee also proposed the expansion of career education programs "for students of all ages because of its increasing alarm about the apparent lack of success of our educational institutions in training people to function in the world outside those institutions". "Included within that category are many individuals with bachelor of arts degrees and more, who despite their education often find themselves unemployable and ill-suited to the real needs of the American job market."[230]

According to the Senate report, career education programs have shown they are capable of narrowing the gap between school and work. It urged that efforts concentrate on the school-to-work problem itself and back away from trying to resolve the various and often conflicting definitions of career education. The multiplicity of definitions, most of which "are substantially correct," has come about "not because the concept itself lacks validity, but rather because the problem itself is one which transcends easy definition".[231]

The Pell bill authorized $25 million for fiscal 1978 rising to $75 million by fiscal 1982 to fund development of elementary and secondary school career education and career development information needs; support for state and local agencies to develop their own career ed strategies, an assessment of existing career education programs, demonstration and replication of the best programs; and training and retraining of personnel.[232]

"Vocational education" is defined as a more narrow concept involving "skill development",[233] and therefore is but one element in the more general concept of "career education". In particular, vocational education has been defined as the "preparation at the high school and one-to-two year post-secondary levels for careers in many semi-professional fields, some traditional, some as new as the technologies they serve".[234] Since many young people exposed to career education options in the lower grades elect particular vocational programs as the route to their career choice, vocational education is an integral part of the career education concept. Dr. Buzzell pointed this out explicitly when he stated: "Vocational education is a discrete element of the broader philosophy of career education."[235]

One of the central features of career education is that it involves the process of "infusion" into the total educational experience. By this is meant that career education is not limited to a discrete course or facility or stage of development. Rather, career education is infused throughout the entire educational system -- in the disciplines of English, mathematics, civics, counseling, and so forth. . . . . "it involves a restructuring of the basic school subjects around the theme of career development."[236] In contrast, the element of skill development or vocational education is more clearly visible. It occurs in particular facilities, in the shops, and in the laboratories.

Two of the most significant aspects of career education are its emphasis on reaching children at an early age, and its delineation of the different types of career education which are appropriate to different stages of development. In general, the elementary school years are viewed as a time during which students should gain career awareness by becoming aware of the wide range of career options, developing self-awareness, and developing favorable attitudes about the psychological and social significance of work.[237] Junior high school is generally seen as a time of career exploration and orientation during which students should "explore specific clusters of occupations through hands-on experiences and field observations, as well as through classroom instruction". It is also a time when they "begin to develop career decision making skills".[238] Senior high school students are in the stage of career preparation where they actually prepare for job entry in a selected career area through classroom, laboratory, and on-the-job activities, and also prepare for further education. From the career education perspective, high school academic subjects become more relevant because the student is helped to perceive their relationship to future career goals. Ideally, all exiting high school students would be assisted by the school in securing placement in either a job, a post-secondary occupational program or in a college or university. In contrast to the present situation, college students would enroll in higher education with a purpose and a clear sense of direction focused on a career goal which they have established for themselves.[239]

Because there are more than 23,000 active job titles in the United States today,[240] many career education programs utilize a "cluster" framework in orienting students to careers. Instead of exposing students to individual occupations, they analyze the world of work through career clusters, i.e., varieties of occupations that have certain commonalities. The U. S. Office of Education has broken down the 23,000 occupations into 15 occupational clusters, e.g., business and office occupations, health occupations, communications and media occupations.[241] Schools using the "cluster" concept might have students analyze each cluster of occupations, focusing on the societal needs they fulfill, varieties of occupations within the cluster, and the opportunities available in the various classes of occupations.[242] The seventh grade is viewed as a particularly important stage for implementing the "cluster" concept, because it is at this time that priority is placed on career "exploration".[243]

Interestingly, the only area of the curriculum in which the principles of career education have been widely implemented is in seventh grade practical arts. Although it is unintentional, the "cluster" concept is implemented in many of these courses by focusing on only those occupations which relate to the seventh grade practical arts curriculum, e.g., industrial arts and home economics related occupations. The industrial arts (i.e., shop) and home economics (i.e., cooking and sewing) courses have traditionally had exploration as one of their important goals.

In his article, "Vocational education and guidance: A system for the seventies", James Rhodes suggests that just as industrial arts teachers assist students in exploring such occupations as construction work and manufacturing, social studies teachers can help students explore service occupations and science teachers can explore scientific occupations. Rhodes notes: "For some unfathomable reason, the public education system has accepted the concept of industrial arts as an exploratory function and as a part of the school curriculum, but has ignored the need for exploration in relation to other broad areas of work."[244] The exploratory function is seen as important because it provides students with experiences "of a tryout nature to enable them to evaluate their interests and abilities in that area".[245]

It is important to note that seventh grade practical arts is not considered a part of vocational education. The reason is that practical arts is designed to provide knowledge and skill of a general nature needed by all individuals rather than the specific competencies required for a particular vocation. While the present vocational education system is an umbrella for a large variety of programs, most seek to equip students with a marketable skill or a basis for further education or training. The common denominator linking all the programs included under the rubric of "vocational education" is their eligibility for federal support through the various vocational education acts and amendments.[246]

Implementation and Impact of existing career education and vocational education legislation

Two studies have recently been conducted on career education and vocational education, respectively. One sheds light on the extent of career education implementation across the nation; the other describes the impact of existing vocational education. Together they provide strong support for an increased emphasis on career education.

The study on career education implementation was conducted by the American Institutes for Research (AIR) as a requirement of the first federal career education legislation, passed in 1974.[247] Section 406 of Public Law 93-380 provided for a Federal role in career education by establishing a National Advisory Council for Career Education and an Office of Career Education within the U. S. Office of Education. A sum of $10 million was appropriated for Fiscal Year 1975, and the funds were used for 80 demonstration projects. The law also mandated that the Commissioner of Education and the National Advisory Council carry out a survey and assessment to determine the status of career education programs and practices.[248]

The AIR study utilized four primary sources of data for the survey: a representative sample of 900 local school districts from which 860 respondents provided information on local career education practices, policies, and needs; the 50 State education agencies which provided up-dated information on their career education efforts; the membership of the American Association of Colleges for Teacher Education (839 institutions) from which 630 respondents reported on the extent to which career education is incorporated in training provided for education personnel; and a pool of 797 commercial and 2,193 non-commercial instructional materials.

The study's major finding was that only about three percent of the nation's students were in districts with career education programs in 1974-1975. The study found formal career education policies in fewer than a third of the 860 school districts. While the vast majority of the districts responding endorsed career education, sixty percent also responded that their activities were "limited" at the present time.

Despite the fact that much of the career education concept focuses on early education (i.e., elementary and junior high), the AIR researchers found that most career education activities were still being carried out in the high schools and by counselors. Elementary level activities were slightly more likely to be found where the overall level of implementation was high and where formal career education policies had been established.

The study noted that career education expenditures per pupil were a "key indicator" of the school districts commitment to career ed. "Per pupil expenditures on career education averaged $2.71 in districts with a formal policy and $1.05 in other districts."[249] The most frequent career education activity carried out during 1975 was staff development, in which 57% of the districts were involved.

With regard to the types of career education activities engaged in, the study found that informational activities were prevalent among young students, with equal amounts of information and skill learning among older students. Approximately 21% of the elementary school students participated in activities to develop the self-concept, including interests, attitudes and values with respect to work. At the junior high school level, provision of career-relevant skills was emphasized, "especially decision-making as it concerns career plans and occupational choices, with about 31% of secondary students nationwide participating."[250]

The study found that district size was strongly associated with career education implementation; school districts with larger enrollments had far more career education activities than smaller districts. Moreover, large and small districts also differed in their perceptions of the importance of various career education outcomes and in difficulties encountered. Smaller districts reported (1) insufficient interest and endorsement by the business-labor industry community; (2) lack of funds to purchase materials; and (3) not enough competent persons to train staff. Large districts cited endorsement of parents and Federal assistance as contributing to success.[251]

While the AIR researchers found that there was "little or no ethnic inequality in the overall implementation of career education,"[252] some differences were noted. For example, they found that there were more career education programs at the elementary school level with heavy concentrations of minorities, although these districts tended not to have formal career education policies or advisory councils. In addition, minority districts generally rated student career education outcomes as more important than did districts with white majorities. Where career ed programs for special target populations were found, they tended to be aimed at the handicapped and less frequently at women, minorities, or the gifted.

While most states (42) had adopted a formal, written career education policy, only 27 of these included a plan for organizing or implementing career education activities. Only 9 states had passed any legislation on career education. In general, the study found "a remarkable variation of activities as each State agency developed its own approach".[253]

In the majority of cases, career education activities of State agencies were found to have varying levels of impact across districts in the state, with many State efforts being focused on a small number of demonstration projects. In general, the highest priority in the states seemed to be on support of in-service staff development and making career education curriculum materials available.[254]

Examination of responses from the teacher training institutions revealed that while career education was being actively discussed in most schools of education in institutions of higher education, actual adoption of its objectives was still largely "under consideration". Only 10% of the institutions had developed a formal policy. With few exceptions, AIR found that schools of education allocated less than 7% of their budgets to career education in both 1974-1975 and 75-76. These funds came mostly from the state, and "expectations for continued State funding were not high".[255] Despite the great need for staff development indicated by local and state respondents, less than half of the responding institutions (40%) offered any in-service career education courses.

Finally, AIR examined the pool of 797 commercial and a sample of 90 of the 2,193 noncommercial instructional materials. Their results indicated that both sets of materials "showed a lack of concern for students with special needs, and there were instances of sex and ethnic group bias, mostly in commercial materials".[256] In addition, they pointed to the need for more clearly-stated objectives and sound procedures for evaluating whether or not objectives have been achieved.

The researchers concluded by pointing to a number of career education activities which should receive greater emphasis. One is the use of work-related resources to teach basic skills, particularly at the secondary level. Another is the teaching of "decision-making skills to improve career planning". A third is the use of work experience to help in choosing occupations. A fourth involves the coordination of career education experiences across grades. They recommended the establishment of advisory committees for career education to assist in the implementation of these objectives. Finally, the researchers pointed to the importance of evaluation, which needs to be more objective and systematic.[257]

The need for an increased emphasis on career education activities and widespread career education implementation is buttressed by studies which indicate the failure of vocational education training to provide adequate jobs, particularly for minorities and women. A study prepared by the Center for Research and Development in Higher Education at the University of California at Berkeley in 1974 had extremely disappointing results with regard to the impact of vocational education training.[258]

The study was based on the labor market experiences of 2,270 graduates from 50 randomly selected schools in Boston, Chicago, Miami and the San Francisco Bay Area. Both private and public colleges and technical schools were represented. The occupations studied were accountants, computer programmers, electronic technicians, dental assistants, secretaries, and cosmetologists.

The key findings of the study were that (1) eight out of every ten graduates of professional- and technical-level postsecondary vocational programs did not get the jobs they trained for; (2) eight out of 10 graduates from lower-level vocational programs got jobs they trained for but, with the exception of secretaries, barely earned the federal minimum wage. The study found that students who train for jobs at vocational schools stand a poorer chance of getting jobs than graduates of four year colleges and universities and earn less money. For example, the study found that accountants trained by vocational schools started at a salary of $131 per week while graduates of four year colleges in the same year were paid $204 to do the same work.

The study found that race and sex were even more important factors than type of school attended. For five of the six occupations, whites earned an average of 8.24% more than other ethnic groups. The women who trained for accounting jobs all became clerical workers instead, and earned 23% less than men in the same job classification. Most of the women who trained to become computer programmers also became clerical workers, and earned 16% less than men in the same job category.

While vocational programs in profit-making schools have the advantage of being shorter and more intensive than public schools, they cost students, on the average, ten times as much as public schools for essentially the same job and earnings.

b. Knowledge About Occupations

While all types of knowledge contribute to occupational potential, this review focusses on knowledge about occupations. Occupational knowledge is important because it may be used as the basis for considering or rejecting occupations, and may provide incentives or disincentives for acquisition of related training or skills. Accurate and adequate knowledge about occupations can thus contribute to career development based on factual knowledge about a wide variety of occupations.

Wise, Charner, and Randour (1976) designed a conceptual framework to describe aspects of career awareness.[259] According to this view, career awareness consists of four elements which "all participate in a dynamic and interactive way in the formation of individual career awareness and career choice".[260] The four elements are knowledge, preferences, values, and self-concept.

In an earlier paper Wise et. al. (1975) defined "knowledge" as: "factual information about the skills and educational requirements of an occupation, the nature of the occupation in terms of its processes and products, its potential for access, advancements, and benefits".[261] They noted that knowledge about the dimensions of work affects "(a) preference for a work activity or return, (b) the value placed on a particular routine or return, and (c) one's self-concept with regard to a specific work activity".[262] In this way it can be seen that occupational knowledge is both distinct from and related to the other aspects of occupational potential which have already been reviewed (e.g., self-concept, aspirations).

Researchers Aimee Dorr Leifer and Gerald Lesser recently reviewed the literature on "The development of career awareness in young children." (1976).[263] They conceptualized "career awareness" as consisting of several different but interacting clusters of information and attitudes. Three clusters of information about work were identified: information about occupational behavior; information about antecedents and social consequences; and information about the self. Information about occupational behavior includes knowledge about what occupations exist in our society, what people do in these occupations, the skills required for the occupations, and who performs what kinds of work. Information about antecedents and social consequences includes knowledge about how people come to occupy particular occupations, what interests and values lead to particular occupations, what training is needed, how access is managed, information about the lifestyles of people in various occupations, what is achieved as a consequence of various forms of work, their limitations. Information about the self focuses on individuals assessment of their capabilities, potentialities, interests, values, and resources.[264]

Leifer and Lesser's review indicated that very little is known about the career information of children between the ages of four and twelve in any of the three information clusters.[265] Some work was found on children's knowledge of the skills required by various occupations, and on children's understanding of the status hierarchy of occupations in the United States. Generally, information on children's knowledge of the existence of different occupations has been based on studies of aspirations rather than on occupational knowledge per se.

The limited evidence which does exist suggests that young children know about relatively few of the many potential occupations available to them. Despite this limited knowledge, children do understand the status hierarchy of the occupations they know about and as we have already seen, largely accept the traditional assignment of men and women into their structure.

For example, a study by Sylvia Goodson (1970) interviewed 180 children in grades 3 through 8 with regard to their occupational interests, knowledge, and attitudes. In her conclusion, Goodson noted that "many students revealed ignorance or misinformation about the work people perform".[266]

Barbara Fulton did her Ph.D. dissertation on the vocational development of children.[267] The study identified occupations about which children are aware, what they know about these occupations, and at what age level they acquire this knowledge. A total of 225 children from three Missouri communities - urban, suburban and rural -

participated in the study. The sample consisted of 45 preschool children, and 60 children from each of grades one, three, and five.

The results indicated that children begin learning about their parents' occupations during their preschool years and this knowledge increases with grade level, and that children progressively are able to list more occupations from preschool through grade five. In addition to being able to name more occupations, children improve with increased grade level in their ability to: (a) sort occupational pictures on the basis of similarities and differences; (b) respond to pictures with appropriate job titles; (c) identify occupational activities; (d) estimate the economic status of workers; and (e) associate the sex of workers in various occupations.

Other results showed that none of the children had yet acquired accurate knowledge about job training, nor had they acquired a high level of understanding of pictorial occupational absurdities. The study showed that children begin to eliminate occupations during the preschool years and that close agreement exists between adults and childrens' rank ordering of occupations. Finally, Fulton's study indicated that children from three quite different communities were much more similar than different in vocational development through the fifth grade.

Researchers Marvin Powell and Viola Bloom (1962) reviewed the evidence on the development of the reasons for vocational choices of adolescents through the high school years. Among their major conclusions, they pointed to the general lack of knowledge of vocational fields in both males and females. "Youth are frustrated in the intelligent selection of a vocation because of the lack of knowledge of vocational fields. Conflicts arise when the individual is not aware of the breadth of opportunities in each vocational field and thus the youth becomes inhibited in entering an occupation of his (sic) choice. There is definite need for more vocational orientation in junior and senior high school."[268]

Richard Nelson investigated occupational knowledge and interests among elementary and secondary school students in 1963.[269] Noting that "accurate occupational information is essential to effective occupational choice",[270] Nelson sought to provide an objective description of some elements of occupational knowledge. The sample consisted of 595 students from the Baltimore County school system. Half of the students from each of grades three, five, seven, nine, and eleven were drawn from a semi-urban district, the other half were from a semi-rural district. All of the students were of average or slightly above average intelligence (based on test scores), and they represented all levels of socioeconomic status. It is important to note that the population sample was not randomly selected, and to this extent the generalizability is limited. It is also limited because the study was conducted about 15 years ago in which time substantial change may have taken place.

The instrument consisted of slides of workers depicted in 16 occupations and a questionnaire requesting information about the title of the job, a description of the job, a reaction concerning the prospect of entering the job (yes, no, or not sure), and the reason. The occupations were explicitly selected so as to "reflect the three to one ratio of men to women in the local occupational structure".[271] With one possible exception (i.e., female assembler), the sexes were depicted in occupations which are consistent with traditional sex-role stereotypes. Females were shown in the role of teacher, sales clerk, secretary, and assembler. Males were shown in a wide range of occupations, including truck driver, carpenter, manager, engineer, and farmer.

The results indicated that neither boys nor girls were consistently superior in their ability to name job titles. There were sex differences, however, in the students' ability to title and describe particular occupations, as well as in their reactions to and reasons for responding yes or no to the various occupations. For example, boys were better at titling the occupations of assembler, carpenter, and telephone lineman while girls were better at titling the sales clerk and engineer.

Nelson found that sex was the most important factor in determining reactions to the various occupations. Boys exceeded girls in numbers of positive reactions for all occupations in which significant sex differences were found, except for the four occupations depicting female workers. Both sexes frequently mentioned sex-inappropriateness as a reason for not choosing occupations. This factor was mentioned as a reason a total of 120 times.

In general, there was a strong tendency to respond negatively to the occupations. Negative responses outnumbered positive responses nearly three-and-a-half to one for all children in the study. Nelson drew the implication that negatives are of great importance in occupational decision-making not only because they limit the occupations from which choices may be made, but also because "they form points of reference to which newly-encountered occupations are compared".[272]

A number of significant differences were found for the other independent variables as well. The children showing more knowledge about occupations tended to be from the higher socioeconomic levels, higher intelligence levels, higher grade levels, and urban background. The order of importance of these four independent variables was grade level (most important), intelligence level, socioeconomic level, and urban-rural background (least important).

Overall SES and intelligence differences were also found in students reactions to the occupations. Students from lower socioeconomic backgrounds and with lower intelligence responded more positively toward the occupations than students from higher SES and higher intelligence levels. Also the rural students responded more positively than the urban children except with respect to the engineer.

For the most part, reasons which were given for reactions to particular jobs at one grade level, socio-economic level, or intelligence level were similar to the reasons given by other subgroups. From this Nelson drew the implication "that these children reacted toward these occupations in much the same way that adults might be expected to react".[273]

This study is important because it demonstrates the beginnings of the occupational elimination process during the early elementary school years. It leads to the conclusion that "relatively irreversible and damaging occupational concepts may be internalized because little effort is made to help children develop an early and objective understanding of the world of work".[274]

Therese Rauner studied occupational information and occupational choice among female college students in 1962.[275] As a part of an intensive study of the vocational choices of a population of juniors and seniors in college, she attempted to find out how extensive their knowledge of their chosen occupation was, and to determine the relationship between the knowledge of the occupation chosen and such factors as class, age, and high school background.

The sample consisted of 97 seniors and 89 juniors from a college in western New York State. A questionnaire was administered to the women consisting of 13 questions of the type: "Is there an over-supply or under-supply of workers in the occupation you have chosen?" The questions tapped many of the aspects of occupational information conceptualized by Leifer and Lesser, particularly with regard to information about occupational behavior, antecedents and consequences.

The results once again pointed to the inadequacy and relative lack of knowledge about the occupations these women were planning to enter. Only about one-third of the subjects had as good as or better than a 75% knowledge of the correct answers. This lack of information was evident in questions having to do with professional organizations, dangers one might encounter, the age-range preferred by employers, and the wage-range for beginners in the field.

When Raumer analyzed the data for relationships with a number of other factors, several interesting results emerged. She found that occupational knowledge was associated with the curriculum being studied, the occupation chosen, and class level. Students in the nursing, education, and B.S. in science curricula tended to have better knowledge scores than students in the liberal arts and business curricula, the latter being less specifically oriented toward an occupation than the former. A related difference was that students choosing the three occupations of nursing, medical technology, and biological and industrial research had better knowledge than students choosing other occupations. Not surprisingly, seniors tended to achieve better knowledge scores than juniors. In contrast to Nelson's study, no relationship was found between occupational knowledge and mental ability. Nor was there a relationship between type of high school attended and occupational knowledge.

The evidence reviewed in this section demonstrates that students of both sexes and at all ages are seriously lacking in occupational knowledge. They not only lack knowledge about virtually every aspect of the occupational world, but they lack information about the specific occupations they are planning to enter. While many reasons could be postulated to account for this dearth of information, schools seem to be particularly remiss in teaching students about occupations. For example, a study conducted by Joseph Mezzano in 1969 revealed that only 7% of the schools in one state (Wisconsin) taught courses in occupations. Moreover, only about half of the teachers who taught such courses had any training which would qualify them to do so.[276]

c. Sex-typed Education for Sex-typed Occupations

The differential education of males and females can be traced throughout our history, and is firmly rooted in traditional views of the female role. Where it has been given to females, vocational education has focused on occupations defined as "female", such as dressmaking, millinery and secretarial skills. Vocational education courses have centered as much as possible on home economics or domestic science. Skills that could offer returns in the job market as well as at home were considered doubly valuable; hence cooking and sewing became predominant. In any case, vocational education has invariably been subordinated to what was considered women's larger role as homemakers.[277]

Women's academic education has also been limited to the female stereotyped courses of study. Historically, women who went on to college studied in fields such as elementary education, home economics, and nursing.

A third way in which women's education has been inferior to men's is that it has failed to provide them with the knowledge and skills in certain critical areas, most notably mathematics and science, which would allow them to pursue a wide range of nontraditional occupations.

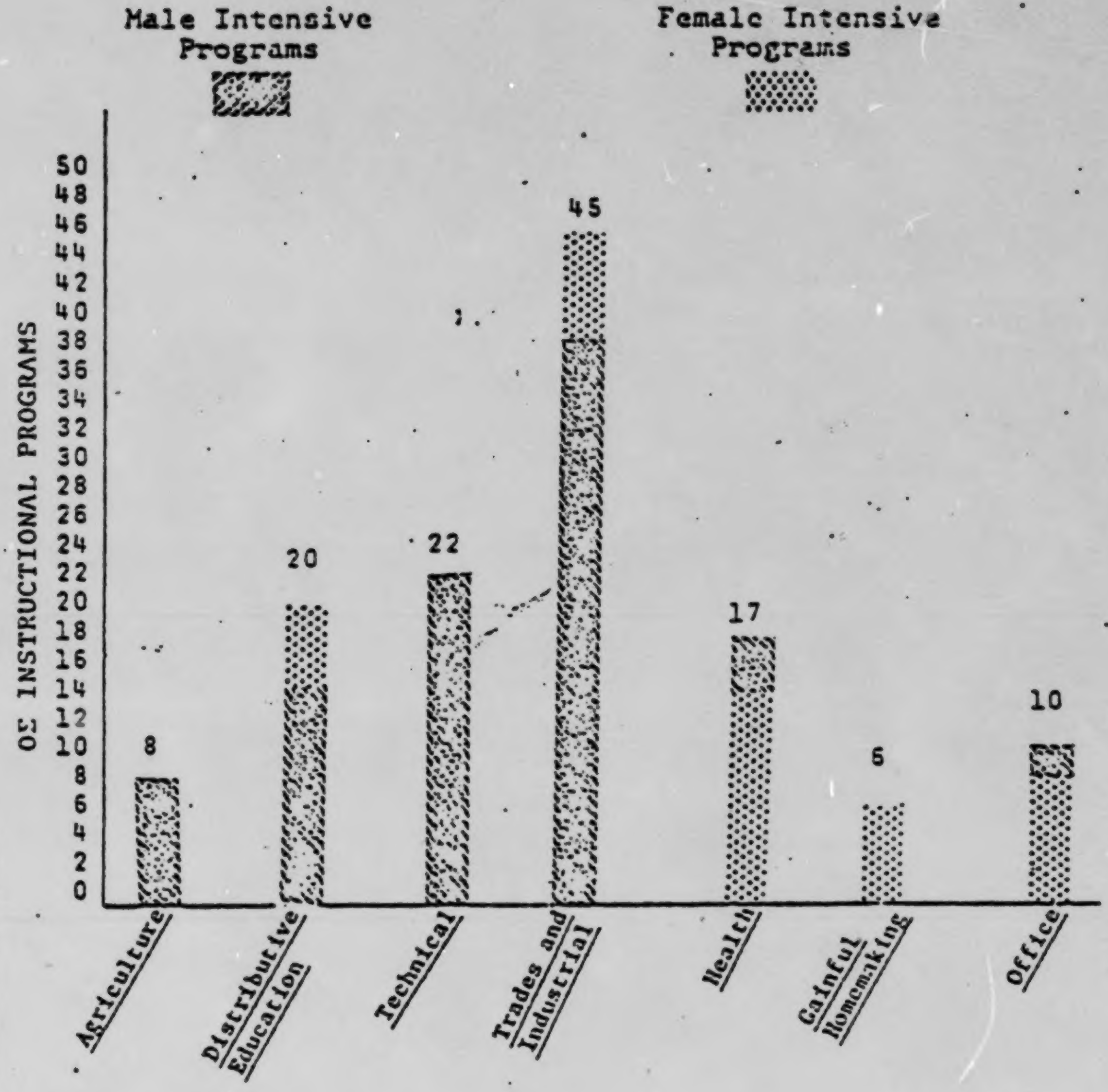
Woman's education is therefore inferior not only because of the education it does provide, but also because of the education it fails to provide.

The most recent evidence available indicates that women are still largely restricted to the vocational education programs that conform to traditional sex stereotypes. For example, in 1972, (the last year in which the Office of Education collected vocational education enrollment data by sex) almost 50% of all female vocational education enrollments were in non-gainful home economics, and 30% were in office occupations -- mostly typing and filing courses.[278] At the same time, less than 5% of the female enrollments were in the trade and industrial programs which lead to higher paying jobs, and which accounted for almost 50% of the male enrollments.[279] Analagous sex stereotyped enrollment patterns are found in post-secondary schools and in four year colleges.[280]

These figures are even more dramatic when one considers that, contrary to popular belief, there are actually more female students enrolled in vocational education programs than males. Between 1970 and 1972, the proportion of females in all vocational education programs was 55%, primarily in traditional female courses. In secondary level programs, about 66 percent of enrollees were women. In post-secondary programs, about 40 percent of enrollees were women, and in post-secondary females represented about 46% of all enrollees.[281] Figure 1[282] and Table 2[283] illustrate the limited program options in which these women were enrolled.

FIGURE 1

Wage-Earning Vocational-Technical Programs, 1972
(All Secondary and Postsecondary Programs)



Source: Marilyn Steele, Women in Vocational Education: Project Baseline Supplementary Report, Technical Education Research Centers, Inc., (Washington, D.C., 1974).

TABLE 2

Distribution of Total Enrollments in Vocational Education and Percentage by Sex and Program, 1972*

	Total Enrollments in Vocational Education	% of Total Enrollment	Female Enrollments	Male Enrollments	Percent Female	Percent Male	Females as % of Total
Agriculture	896,460	7.7	48,153	848,307	5.4	94.6	.4
Distribution	640,423	5.5	290,020	350,403	45.3	54.7	2.5
Health	336,652	2.9	285,071	51,581	84.7	15.3	2.4
Home Economics	3,445,698	29.7	3,157,935	287,763	91.6	8.4	27.2
Gainful	(279,966)	(2.4)	(240,948)	(39,018	(86.1)	(13.9)	(2.0)
Consumer Homemaking	(3,165,732)	(27.3)	(2,916,987)	(248,745)	(92.1)	(7.9)	(25.1)
Office	2,351,878	20.3	1,796,387	555,491	76.4	23.6	15.5
Technical	337,069	2.9	33,006	304,063	9.8	90.2	.3
Trade & Industry	2,397,968	20.7	279,680	2,118,288	11.7	88.3	18.3
Special Programs	1,304,619	11.2	582,715	721,904	44.7	55.3	5.0
Total	11,602,144	100.9	6,422,115	5,180,029	--	--	55.8

*Includes below grade 9 and postsecondary enrollments.

Source: Division of Vocational and Technical Education, *Summary Data Vocational Education Fiscal Year 1972*, Washington: Office of Education, Department of Health, Education, and Welfare, May 1973, p. 1.

Women's vocational education is also inferior in terms of dollars and cents spent on it. The cost per student in Trade and Industrial programs is about three times the cost in Consumer Homemaking programs ($191 compared with $65).[284] Student-teacher ratios are another indicator of the relative importance attributed to women's education vis-à-vis mens'. Here too the evidence indicates that woman's education is inferior to mens'. For example, the ratio of students to teachers in technical subjects is 20 to 1, and in trades and industry it is 37 to 1. In contrast, the ratio in traditionally female consumer and homemaking subjects is about 91 students for every one teacher, and in office skills there are about 45 students for every one teacher.[285]

Several studies attempted to determine if there have been any changes or improvements in the vocational education of women in recent years. Peter Holmes, the Director of the Office for Civil Rights, DHEW, examined the "Enforcement of Civil Rights Statutes in Area Vocational-Technical Schools" in 1974.[286] While noting that "much has happened both in vocational education and in civil rights since the early days,"[287] Holmes pointed to widespread discrimination on the basis of sex. His comments were based on preliminary findings from a sample of 1,500 vocational schools. Out of this sample, OCR found that many vocational schools continue to separate programs and courses by sex, and a number of schools accept only students of one sex. He estimated that there are approximately 40 such single-sex institutions, mostly in the Northeast, where "some traditions do not change easily".[288] Nearly all of the schools surveyed listed at least one course that was exclusive to one sex and nearly 60 percent reported that a majority of the course programs in the school were exclusively for males or exclusively for females. "Single-sex classrooms in area vocational-technical schools are not the exception."[289]

A group of Pennsylvania State University researchers attempted to locate ten "pacesetter" secondary schools in 1974-1975, in order to develop recommendations for increasing female enrollments in nontraditional areas. They were looking for vocational high schools which were actively encouraging women to train for occupations in traditionally male-dominated fields. After scouring the country, the researchers could not find any "pacesetter" schools which had specific procedures or programs designed to encourage females to enter traditionally male occupations. Instead, they had to settle for eleven vocational and comprehensive high schools that had enrolled at least five females in one or more nontraditional courses. These schools had no special programs, and the females were not enrolled in "hard core" male programs such as construction, metalworking, or auto mechanics. Instead, the females were found in such "gray" areas as vocational argriculture, printing, industrial chemistry, or television arts.[290]

Elizabeth Boyer (1973) sent questionnaires to presidents of 830 publicly supported two-year colleges that had technical-occupational programs to ascertain if there had been an increase in women students enrolled in 14 programs from the year 1971-1972 to the academic year 1972-1973.[291] She found that overall enrollment of women in these programs is still "slight" and is increasing only very gradually.

Some institutions had made a certain amount of effort to attract women students with only modest success. Those institutions which have made considerable efforts, however, "have rather uniformly been able to increase their enrollments of women".[292]

There was considerable variation across subject areas in terms of their attractiveness to women. Increased enrollments were found in accounting, management, computer technology, marketing, and retailing programs. No increases and some decreases were found in drafting, electrical-electronic technology, chemical technology, engineering, industrial supervision, mechanical technology, transportation, wholesaling and purchasing.[293]

Altogether, Boyer identified five methods that were used to attract women students: increasing the number of female faculty, use of pictures of women in publicty, seminars for high school counselors, elimination of male pronouns in publicity, and the use of women recruiters for programs. The predominantly used technique was the use of pictures of women. Those schools that utilized a majority of the techniques were also the most likely to attract women students.

In terms of academic education, there are no overall sex differences in amount of education received. Both men and women have, on the average, slightly more than a high school education. There are considerable differences, however, in the distributions of the sexes across educational levels. Men tend to be found at both the low (high school dropout) and the high (master's or doctoral degree) ends of the continuum, while women tend to be disproportionately concentrated in the middle levels of education, i.e., high school and college levels.[294]

A recent study by the National Center for Education Statistics (NCES) examined degrees earned over the ten year period from 1964-1965 to 1974-1975. This study suggests that although they are still far behind men in their acquisition of education, women are receiving an increasing percentage of bachelor's and higher degrees.[295] The degrees earned by women in 1974-1975 represented about 43 percent of all the degrees awarded in that year, up from about 38% in 1964-1965. These six percentage points of increase represented a doubling of the actual number of degrees awarded to women -- from 664,000 in 1965 to 1,305,000 in 1975.[296]

The greatest proportional increases of female degree recipients have occurred at the higher degree levels, according to the same study. For example, over the same ten year period women doubled their proportion of doctor's degrees, and more than tripled their percentage of first-professional degrees (i.e., M.D., D.D.S., LL.B., etc.). Yet, women still only earned about 21% of all doctor's degrees and 12% of all first professional degrees.[297]

The NCES study also examined trends in degrees earned by women in different fields of study. Among their most noteworthy findings were trends for an increasing percentage of women earning B.A.'s in the fields of computer and information sciences (from 5% to 19%), architecture (from 5% to 17%), and mathematics (from % to 42%), and an increasing percentage of master's degrees in the fields of architecture and environmental design (from 8% to 20%), and mathematics (from 20% to 33%). Another field in which there was a marked increase was in communications, including advertising, journalism and radio/television. In this field, women earned about 42% of the master's degrees in 1974-1975, representing an increase of about 17% over the ten year period.

While more women earned doctor's degrees than ever before, very few earned them in nontraditional fields of study. For example, only 11% of doctor's degrees in mathematics were earned by women in 1974-1975, only 8% in physical sciences, 7% in computer and information sciences, and 4% in business and management. At all three degree levels, the engineering field had the lowest proportion of degrees earned by women. In 1974-1975, women earned only 2% of all bachelor's, master's and doctor's degrees awarded in engineering.

In the first-professional degree category, the greatest increase was in the field of law, with female law degree recipients increasing from 3% in 1964-1965 to 15% in 1974-1975. In medicine and dentistry, women doubled and quadrupled their percentages, but still only represented 13% and 3%, respectively, of all degree recipients in these fields. Figure 2 shows the percentage of degrees earned by women at all three levels, over the three periods 1964-1965, 1969-1970, and 1974-1975.[298]

Cook and Stone (1973) provided data on the academic majors of college women in 1967.[299] Although these statistics are somewhat outdated, they do point to the overwhelming tendency for women to study in traditionally "female" areas. For example, in 1967,

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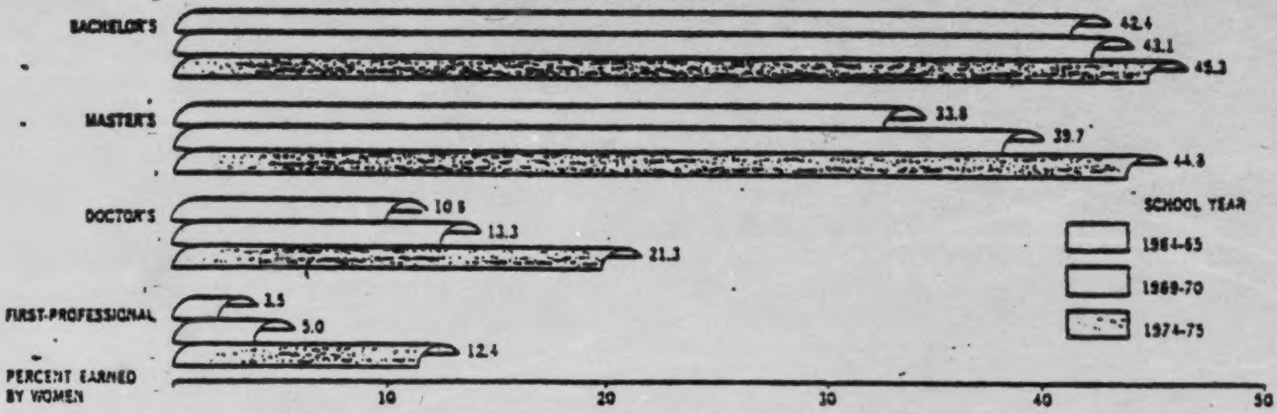
Figure 2



PERCENT OF BACHELOR'S AND HIGHER DEGREES EARNED BY WOMEN: United States,
1964-65, 1969-70, and 1974-75

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, *Earned Degrees Conferred* education, humanities and the arts, and social sciences accounted for 80% of all women's bachelor degrees, 80% of all women's master's degrees, and about 60% of all doctoral degrees earned by women. Elementary education was the single most popular major for women, with about one out of every four women graduates receiving a degree in this area. Virtually all B.A.'s in home economics education, early childhood, nursery, and kindergarten education, and nursing were still earned by women.[300]

A considerable and increasing amount of evidence points to mathematics as a "critical filter" which either allows or prevents women from entering nontraditional occupations. Two studies by Helen Astin, using the statistical technique of discriminant analysis, showed the importance of mathematics to women's occupational potential. In one study, "Career development of girls during the high school years", the Project TALENT Data Bank was analyzed to predict the career plans of 817 female high school seniors from their characteristics as ninth graders and from selected characteristics of their high schools.[301] Astin found that for ninth-grade boys, measured and expressed interests were the only important predictors of their twelfth-grade career plans. In contrast, for the girls only, mathematical aptitude and mechanical information (both abilities in which boys excel) in the ninth grade differentiated between girls who chose occupations in the sciences and the professions and girls choosing more traditional occupations in the twelfth grade.

In one study, sociologist Lucy Sells (1973) showed that girls' inadequate high school training in mathematics can have dramatic consequences for their future lives.[306] She demonstrated that in a random sample of Berkeley Freshmen, 57% of the males had taken four years of high school mathematics, but only 8% of the females had done so. This four year mathematics sequence was required for majoring in every field at the University except the traditionally female. A second finding of Sells was equally striking. She found that among students earning their B.A.'s in the 21 largest schools of letter and science there was a strong and statistically significant relationship between having a one-year college math requirement in the curriculum and having less than one-third of the degrees in the department earned by women.

One inevitable corrollary of women's inadequate high school training is their disproportionately low representation in college math courses. Ernest (1975) reported that while women constituted a majority in the 1971 freshman class at Berkeley, they comprised only one-third of the students in the basic mathematics courses.[307] Furthermore, the attrition rate for women moving from one course in a sequence to the next was almost double that of men. Women were also found to major in mathematics only about half as often as men, and a large part of this discrepancy was due to attrition from female math majors. The same pattern of greater attrition for women than for men held for entry into and completion of graduate schools of mathematics.

At the professional level, evidence indicates that during the past four decades women earned only 7% of the Ph.D.'s in mathematics,[308] and that this percentage has been steadily decreasing with only a slight upswing in recent years. In the period from 1920 to 1924, for example, about 20% of the mathematics Ph.D.'s were earned by women.[309]

Recent evidence indicates that women are only somewhat aware of the importance of math to nontraditional occupations. Roslyn Kane and her associates (1976) conducted "A study of the factors influencing the participation of women in nontraditional occupations in postsecondary area vocational training schools".[310] The researchers found that while women students preparing for traditional and nontraditional fields had had the same number and distribution of math and science courses, considerably more of the nontraditional women felt unprepared for their postsecondary programs. Almost 70% of the nontraditional women who had had less than four courses in math and science combined felt that they had not been adequately prepared in high school, while only 47% of the traditional students felt this way.

Moreover, the researchers found that the percentage of nontraditional women who felt high school had not prepared them for postsecondary education was directly correlated to the number of mathematics and science courses they had taken in high school, and no similar relationship existed for women in traditional courses of study. However, when the nontraditional women were questioned directly as to their "problems and difficulties", only a small percentage of them stressed the importance of math and science backgrounds. These findings led the researchers to the conclusion that "although math and science are critical factors determining the adequacy of the high school preparation of nontraditional women, there are other problems which also contribute to women's feelings that they lack preparation for postsecondary training".[311]

Several researchers have suggested that male's greater acquisition of mathematical training does not reflect a stronger liking for it, but rather a more acute awareness of the importance of mathematics to their future occupational attainment. Recent evidence by John Ernest and his colleagues (1975), for example, showed that male and female students in the second grade through college level exhibit similar patterns of liking for mathematics.[312] These researchers suggested that "men take more mathematics not for the superficial reason that they like math more than women but because, whether they like it or not, they are aware that such courses are necessary prerequisites to the kinds of future occupation, in medicine, technology, or science, they envision for themselves".[313] In her highly illuminating paper "The Feminine 'Math-tique'" Lynn Osen expressed a similar view: "Failure to appreciate mathematics as the indispensable underpinning for academic, social, and economic participation results in poor performance, dislike for the subject, depreciation of its worth and involvement" (1971).[314]

A recent study conducted at the Stanford Center for Research and Development in Testing provided support for this view expressed by

Ernest and Osen.[315] Dornbusch found that male students felt there was the greatest correlation between mathematics and their future occupation of any field of study, while females felt English was most related to their jobs.

Moreover, the study found that the more closely the student related a subject to a future job the more important she or he considered the subject. Thus, it was not surprising that females were found to work harder and receive higher grades than males in every subject except math.

When Dornbusch asked students to make an attribution about why they might get a poor grade in mathematics, more females than males gave lack of ability as the reason (as opposed to bad luck, lack of effort, teacher antipathy). Three times as many females gave "I'm not good at math" as the reason for a poor grade as gave "I'm good at math" as the reason for a good grade. This pattern was not found in any other subject area for either males or females.

Dornbusch concluded from this study that females do less well in mathematics for three reasons: (a) they aspire to jobs which they think don't require mathematics; (b) they are not as pressured as males to do well in mathematics, and (c) when they do poorly, they ascribe this poor performance to a lack of ability, which in turn discourages increased effort.

The evidence presented by Ernest, Dornbusch, and Kane's studies suggest that a conceptual distinction should be made between various motivations for taking mathematics, and that these may be quite different for males and females. It is clear from the literature on occupational aspirations that boys are much more likely than girls to choose careers which require mathematical backgrounds (e.g., science and engineering). However, it is not clear from the literature: (1) whether boys are aware of the intimate connection between their occupational choices and early mathematical training and (2) what the relationship is between this awareness and the likelihood of their taking mathematics. For example, to what extent do boys change their occupational choices when they realize they will have to take a lot of mathematics to attain them?

Similarly, the following questions should be researched with respect to girls: (1) How aware are girls of the relationship between mathematics and career choice? Are they more, less, or as aware as boys of this relationship? (2) What is the nature of the relationship between girls' awareness of the connection between mathematics and career choice and their subsequent mathematics-taking behavior. Is the pattern the same or different for males and females?

One hypothesis which could be derived from these questions would suggest that males and females do not differ in their awareness that mathematics is needed to be a scientist, but that this information mediates opposite behaviors in males and females. According to this view, males who want to be scientists might be more likely to take mathematics, while females who may want to be scientists may choose another field when they realize all the math they will have to take.

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An alternative hypothesis would suggest that, for whatever reasons, males are more aware than females of the importance of mathematics and hence take more of it. According to this view, if girls were better inform.d they would take more mathematics.

These alternative hypotheses could form the basis for a much needed study in this area. If the first hypotheses is supported, then the appropriate research strategy would be to examine the possible sources (i.e., psychological and cultural) of girls' resistance to taking mathematics (e.g., fear of failure, internalization of unrealistic stereotypes of female mathematicians (cf. Ernest, 1975),[316] conformity to peer expectations) and to devise techniques to ameliorate these. At least one study has shown that it is possible to alter attitudes towards mathematics through group discussion, and that problem-solving ability can be improved by this technique (Carey, 1955).[317]

If the second hypothesis is supported, then the appropriate strategy would be to improve the quantity and quality of career education materials and methods to stress the importance of mathematics for a wide range of career options. For example, high school counselors and teachers should encourage women to pursue mathematical studies throughout high school, because of the increasing importance of mathematics as a background, not only in engineering and the natural sciences, but also in other fields, such as the social sciences and business administration.

4. Summary and Conclusions

Evidence has been presented with regard to sex differences in three aspects of occupational development, corresponding to the three hypotheses of the present study: self concept and sense of competence; motivational aspects of occupational development; and acquisition of educational means to occupational attainment.

The studies on self concept and sense of competence indicate consistent and significant sex differences in self-concept, regardless of the dimension of self-concept examined, the measurement instrument used to assess it, or the characteristics of the sample. The greatest sex differences were found in the category of self-consciousness, which manifests an increasing disparity during the adolescent period. It was suggested that girls greater self-consiousness may be one factor underlying their greater attraction to people-oriented occupations.

Although the evidence on sex differences in self-esteem has not been as consistent, it is an important variable to consider inasmuch as low self-esteem clearly exerts a restrictive impact on some women's occupational aspirations and expectations. Thus, overall sex differences may cancel each other out, but women with low self-esteem are nevertheless inhibited by it from fulfilling their potential. Moreover, research suggests an interaction between level of self-esteem and occupational choice as a process of self-concept implementation.

While there is not a tremendous amount of research evidence, that which does exist suggests large and consistent sex differences in perceptions about characteristics and abilities. Males see themselves in terms of "competancy" related attributes, while females see themselves as being more "expressive". Males rate themselves high on achievement oriented qualities, females rate themselves high on artistic and socially oriented characteristics. Finally, evidence was presented to show that self-concept is more than just an attitude or a perception: it also has important behavioral manifestations and ramifications, e.g., assertiveness.

Motivational aspects of occupational development were divided into three categories: aspirations, expectations, and attitudes. The literature on occupational aspirations was criticized because it too often treats aspirations as discrete and static rather than as complex and dynamic motivational forces. A second flaw in this literature is its failure to focus on the environmental contexts in which aspirations may fluctuate and change. These flaws were viewed as having their roots in longstanding sociological and psychological traditions which invoke (1) "the myth of the heroic male professional"; and (2) "the myth of female motivational deficit".

Two classes of studies on aspirations were identified: prospective and "other", including cross-sectional comparisons of women presently in the workforce, retrospective, and longitudinal studies. The prospective studies should be viewed as little more than studies of occupational "intention", which reflect the information and incentives perceived at a given point in time. The "other" studies show that occupational preferences are not necessarily translated into actual occupational behavior.

Granting these limitations, the literature on the development of occupational aspirations was reviewed. This literature shows that there are systematic sex differences from the earliest ages through adulthood in occupational preferences, with girls restricting their choices to a much narrower range than boys, and both sexes limiting their preferences to occupations which are consistent with traditional sex role stereotypes. Not only is the range of occupations restricted in number, but girls at all ages between 9 and 17 choose lower ranking occupations than boys of the same age. A third way in which girls and boys aspirations differ is in terms of the distinguishing characteristics of the occupations they choose. In terms of John Holland's taxonomy (reviewed in Part2), girls tend to prefer occupations in the social, artistic, and conventional categories, while boys prefer occupations in the realistic, investigative, and enterprising categories.

The literature on occupational expectations again reveals striking sex differences from the earliest ages through adulthood in terms of what males and females expect to be doing. Girls as young as 6 years old are aware of the fact that they may have to lower their aspirations to take into account such "realistic" considerations as sex discrimination and lack of support from significant others. Interestingly, significantly more girls indicate that they expect to be a housewife than prefer to do so. In addition, girls are more likely than boys to think that financial considerations will deter them from fulfilling their occupational aspirations. At the same time, boys are more likely to consider financial success as a reason for pursuing certain occupations, while girls are more concerned with happiness and benefitting others.

Several conceptualizations have been suggested to describe the attitudinal variables that may limit women's occupational potential. Attitudes which are both internal and external to women themselves should be considered. Internal attitudinal variables include fear of failure, fear of success, role conflict, and the perceived consequences and incentives for engaging in various occupational behaviors. This review focused on these "internal" attitudinal variables.

Some evidence indicated that fear of failure may be contributing to some women's apparent reluctance to aspire to high level or non-traditional occupations, although it is not clear that women, in general, manifest these fears to a greater extent than do men.

The evidence on fear of success was seen to be rather contradictory, fraught with methodological problems, and of questionable generalizability to relevant behavioral dimensions. Moreover, it is not at all clear from the numerous studies conducted on fear of success that women are more likely than men to manifest it, even in the laboratory.

Evidence was also presented which suggests a conceptual link between fear of failure and fear of success. The two were seen to be essentially equivalent motives for people whose affiliative and achievement needs are closely intertwined.

Three sets of attitudes have been considered because of their individual and collective impact on women's occupational potential: attitudes about the dual role of married women who work, attitudes towards the social, economic, and political equality of women, and attitudes about existing sex-role divisions in occupations and activities. In every one of these categories of attitudes, the literature revealed significant and consistent sex differences, with females always holding the more egalitarian or liberal attitudes than the males. Thus, girls are more likely than boys to think that (1) women can and should work at all, and (2) women can and should work at equivalent jobs to men when they do work.

The attitudinal studies also showed that younger children are more conservative than older children in their attitudes about women's roles, and that there has generally been a liberalization of attitudes over the last ten or fifteen years. However, there has been little or no change in attitudes toward the sharing of traditionally female roles, with males' attitudes being particularly resistant to change.

Sex differences in acquisition of educational means to occupational attainment were reviewed next. Career education, vocational education, and practical arts were defined and distinguished in order to illuminate and illustrate the various views about the relationship between education and occupations. "Career education" is viewed as a broad concept, involving the totality of educational experiences, and requiring a fundamental shift in the important goals of education. "Vocational education" is a more narrow concept, involving specific training and skill preparation with particular occupations as the goal. Practical arts can be viewed as one example of career education implementation, because it stresses the importance of career exploration and hands-on learning, both important aspects of career education at the junior high school level.

A study of career education implementation revealed that only about three percent of the nation's students were in districts with career education programs in 1974-1975. Moreover, most career education activities continued to be carried out at the high school level, rather than at the early levels as proposed by career education theoreticians.

Moreover, the need for career education activities is indicated by studies which show the failure of vocational education to provide adequate jobs, particularly for minorities and women.

While all types of knowledge contribute to occupational potential, knowledge about occupations is particularly important because it may be used as the basis for considering or rejecting occupations, and may provide incentives or disincentives for acquisition of needed training or skills. Accurate and adequate knowledge about occupations thus contributes to occupational choice based on factual knowledge about a wide variety of occupations.

The few studies which have been conducted on the occupational knowledge of children and adolescents show that their knowledge is severely limited. Yet, both girls and boys at all ages are knowledgeable about the status hierarchy of the occupations they know about, and can easily assign males and females to occupations that are consistent with traditional sex-role stereotypes.

While there do not appear to be overall sex differences in the amount of occupational knowledge possessed by children and adolescents, the sexes do differ in their knowledge about particular occupations, as well as in their reactions to and reasons for responding to various occupations. In fact, sex was seen to be the most important factor determining reactions to occupations.

In sum, the studies reviewed in this section demonstrated that students of both sexes and at all ages are seriously lacking in occupational knowledge. They not only lack knowledge about virtually every aspect of the occupational world, but they lack information about the specific occupations they are planning to enter. It was pointed out that schools seem to be particularly remiss in teaching students about occupations.

The final section looked at three ways in which the educational experience of women differs from that of men and prepares them for traditionally female occupations. In vocational education, women continue to be overrepresented in home economics and secretarial programs, while at the same time they are underrepresented in trade and industrial programs. Women's vocational education is also inferior to men's in terms of the amount of money spent on it and student-teacher ratios.

Despite Title IX which prohibits sex discrimination in educational programs receiving federal financial assistance, sex discrimination continues to permeate vocational education. Many vocational schools still separate programs and courses by sex, and a number of schools accept students solely on the basis of their sex. As of 1975, practically no "pacesetter" schools could be found which actively encourage women to train for occupations in traditionally male-dominated fields. Although there has been a modest increase enrollment of women in two-year colleges with technical-occupational programs continues to be miniscule compared to that of men.

While there are no overall sex differences in the amount of academic education men and women receive, far fewer women than men go on to receive master's and doctor's degrees. There is evidence that the percentage of women receiving bachelor's and higher degrees has been increasing at a fairly rapid rate, though, and it is likely that it will continue to do so. Even at this rapid rate, however, it will be quite some time before women achieve parity with men.

Moreover, even when they do go on to receive higher degrees, very few women earn them in nontraditional fields of study. The same sex-typed patterns can be found when analyzing the academic majors of college women. Women tend to be overrepresented in education, humanities and the arts, and social sciences, and underrepresented in business and the physical sciences.

The third way in which women's educational experience differs significantly from that of men's is in their inadequate acquisition of mathematics, a "critical filter" for entering traditionally male-dominated occupations. Studies indicate that mathematical aptitude and acquisition of mathematical training do differentiate between girls choosing traditional vs. nontraditional occupations.

Unfortunately, studies also indicate that as soon as mathematics becomes optional, far fewer than males choose to take it. Women are underrepresented in mathematics courses at the high school, college, and graduate levels. At the college level, the attrition rate for women moving from one course in a sequence to the next is about twice that of men. Only about half as many women as men choose to major in mathematics.

Several studies suggested that women's inadequate acquisition of mathematical training is not due to the fact that they like it any less than men, but rather that they are not sufficiently aware of its importance to their future occupational potential. An alternative explanation is that women purposely aspire to occupations which they think don't require mathematics, because they think they cannot do well at it. More research needs to be conducted to better our understanding of the process by which women (1) eliminate mathematics from their educational agends, and (2) eliminate occupations which have mathematical prerequisites from their occupational possibilities.

It can be concluded from this review that significant and consistent sex differences exist in every aspect of occupational development examined. Thus, women's occupational potential is limited because of their inferior (1) self-concept and sense of competence, (2) motivation to aspire to a wide range of occupational goals, and (3) acquisition of educational means to occupational attainment. Therefore, steps should be taken to provide women with whatever competencies, motivations, and educational experiences may be necessary in order to maximize their occupational potential.

Part Four. Socialization Influences

The evidence reviewed in Part Three. "Sex differences in Aspects of Occupational Development" was concerned with factors internal to or characteristic of girls and women themselves. This section examines the evidence on the external factors which may be contributing to these patterns of sex differences, including teachers, parents, peers, and the media.

1. Teacher Influences

There are numerous ways in which teachers may contribute to sex differences in occupational development. They may model sex-typed behaviors, they may have sex-stereotyped expectations and/or attitudes, and they may exhibit different behavioral interaction patterns with their male and female students. In each of these ways, teachers may be (consciously or unconsciously) modifying, molding, and shaping patterns of behavior and attitudes which place limits on the occupational potential of their students.

a. Modeling

The distribution of male and female teachers in different educational areas itself creates a model which students may emulate. A recent survey revealed that teachers continue to conform to traditional sex-role stereotypes, in terms of the courses they choose to teach. For example, male teachers are overwhelmingly predominant in industrial arts courses (about 98%),[318] and female teachers predominate in home economics courses (about 99%).[319] Students cannot help but be aware of these patterns of sex-segregation, and incorporate them into their images of "appropriate" occupational roles.

That students prefer to model their behavior after like-sexed teachers has been demonstrated in several recent studies. For example, Slaby and Frey (1975)[320] showed that children as young as four years of age prefer to watch a same-sexed model over an opposite-sexed model. Furthermore, the amount and proportion of time the children spent watching a same-sexed model was found to be related to their level of "gender constancy", a rough index of their degree of sophistication with regard to sex roles.

The tendency to imitate same-sexed models is consistent with a large body of research from developmental psychology which demonstrates that similarity between observer and model is an important correlate of imitative behavior (e.g., Bandura & Huston, 1961; Bandura, Ross & Ross, 1961, 1963; Maccoby & Wilson, 1957; Rosenkrans, 1967).[321]

While the evidence is equivocal, some studies have suggested that girls are more likely to exhibit imitative behaviors over and above this similarity factor (Bandura & Huston, 1961; McDavid, 1959; Rosenblith, 1959).[322] To the extent that such a sex difference does exist, it may be due to the fact that girls, in general, behave more dependently than boys (Maccoby, 1966, 1975),[323] and dependency is in turn associated with greater imitation (Bandura & Huston, 1961; Bandura, Ross & Ross, 1961, 1963; Ross, 1966).[324]

A study by Portuges and Feshbach (1972) explicitly examined the influence of sex and socioethnic factors upon imitation of teachers by elementary school children.[325] They found significantly greater imitation of the teacher model's incidental behaviors among girls in contrast to boys, and among white advantaged children in comparison to black disadvantaged children. In addition, the children were more likely to imitate a teacher who used positive reinforcement than one who used criticism, statements of error, and other negative reinforcers.

Although Portuges and Feshbach concluded that there is indeed a sex difference in imitative behavior, the sex difference they found may have resulted from the fact that both of the teachers used in this experiment were female (i.e., more similar to the girls). Moreover, since they found no or negative correlations between the girls' dependency and modeling behavior, their conclusion seems particularly ill-founded. More research needs to be conducted to determine the relationship between sex of child, sex of teacher, and imitative behaviors.

Evidence has also been presented which demonstrates the modeling phenomenon among older girls and young women, and in particular with regard to occupations. For example, a Ph.D. dissertation by Bernadette Shapiro (1973) examined modeling of occupational aspirations among black adolescent females.[326] Specifically, Shapiro was concerned with the effects both of sex typing of occupational roles and of racial similarity between the girls and the models on black girls' acceptance of and learning about various kinds of occupations and the women holding them. A sample of eleventh and twelfth grade black girls listened to black and white women talking about themselves and each of eight different jobs.

The results indicated that girls do learn about and come to accept occupations through the use of role models. Surprisingly, Shapiro found that neither the race of the model nor the sex labelling of the job made any overall difference in girls' recall of information about jobs, learning about the model, or acceptance of the models or jobs. However, there were some significant interactions between the girls level of aspirations, degree of (vicarious) experience with race discrimination and influence of model. That is, girls with high aspirations were more influenced by black models than white models, and girls reporting high levels of vicarious experience with race discrimination were more influenced by black models than white models. These findings were interpreted by indicating that girls find same race occupational models more relevant when occupational information is salient to them.

Finally, in her study of three cohorts of women listed in three successive editions of Who's Who of American Women, Tidball (1973) found a highly significant positive correlation between the number of women faculty on campuses and the number of women achievers graduating from such campuses.[327] While it is not clear whether this result was due to the existence of female role models per se or to the opportunities for same-sex student-faculty relationships, the study does indicate the existence of a relationship between achievement by women and exposure to women faculty.

b. Sex-stereotyped Expectations and Attitudes

While there is not a great deal of research on the topic, that which does exist clearly indicates that teachers are not different from everyone else in the degree to which they hold sex-stereotyped expectations and attitudes. For example, studies by Feshbach (1969) and Levitin & Chananie (1972) found that student teachers and first and second grade teachers had well defined sex-role expectations for their students.[329] In addition, teachers tended to exhibit a relative preference for the female role, which was roughly defined as "orderly, conforming, and dependent".[330] As a result, teachers place pressure on boys to accommodate to a pupil role which basically conflicts with their sex role while at the same time placing pressure on girls not to deviate from the female sex role.[331]

For her Ph.D. dissertation, Brenda Mary Samara examined teachers' conceptions of children's sex roles, and the relationships that certain attitudes and personal background data may have on these

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conceptions.[332] It was assumed that teacher's attitudes and stereotypes "affect how they relate to their students, what they communicate to their students, and what they expect from their students".[333]

The results clearly showed that teachers' conceptions of children's sex roles were significantly different depending on the sex of the child. Moreover, an examination of the content of the teachers' conceptions of sex roles in "healthy" elementary school children revealed "a powerful, negative assessment of females".[334] A healthy girl was expected to be "talkative, interested in her own appearance, neat in her habits, express tender feelings and enjoy art and literature".[335] In addition, she was expected to be lacking in the following attributes when compared to healthy children and healthy boys: "aggressiveness, competition, control of emotions, independence, liking math and science, world orientation and leadership".[336]

Samara also found significant relationships between the teachers' attitudes about the Women's Liberation movement, certain personal background variables and the degree of stereotyped thinking regarding sex roles in healthy elementary school children. A profile of a teacher who most likely perpetuates and reinforces the restrictive sex role stereotypes in her students was identified.

In his study "Mathematics and Sex", John Ernest (1975) examined the perceptions of teachers about sex differences in aptitude and performance with regard to different subjects.[337] A small sample of elementary and high school teachers (24 women and 3 men) were asked to indicate in which subjects they thought boys did better and in which subjects they thought girls did better. Ernest found that 41% of the teachers felt that boys did better than girls in mathematics and no teachers felt that girls did better. Similarly, 41% of the teachers felt boys did better in science, and only one felt girls did better. In contrast, almost two-thirds of the teachers(63%) indicated that they felt girls did better than boys in English, and no teachers felt boys did better.

Although there may be some empirical validity to the teachers perceptions, extensive research has pointed to the fact that teacher expectations can also act as "self-fulfilling prophecies".[338]

Finally, in their study "Attempts to overcome sex stereotyping on vocational education", a team of researchers at the Institute for Research on Human Resources at the Pennsylvania State University noted that stereotypes among vocational education teachers are still widespread.[339] For example, teachers felt that male students are more mechanically inclined and more capable of heavy lifting. In comparison to males, females were viewed as neater, less likely to curse, and as causing "sexual attraction" problems. However, a majority of the teachers saw no differences in the learning motivation of their male and female students, and none of the teachers openly objected to having a coeducational class.

c. Sex Differences in Teacher-Pupil Interactions

In addition to modeling, expectations, and attitudes, extensive research has been concerned with sex differences in the interaction patterns between teachers and students. The earliest work in this area was motivated by a concern that female elementary school teachers may be (consciously or unconsciously) "discriminating" against boys. For example, a number of studies had shown that elementary school children generally think that their teachers favor boys over girls (e.g., Meyer & Thompson, 1956; Davidson & Lang, 1960; McNeil, 1964; Davis and Slobodian, 1967).[340] Other studies had shown that elementary school teachers gave girls higher ratings than boys on general behavior and motivation (Davidson & Lang, 1960; McNeil, 1964)[341] and are more favorably disposed toward girls and "female qualities" than toward boys and "male qualities" (Arnold, 1968; [illegible] Schaefer & Davis, 1968; Jackson, Silberman & Wolfson, 1969).[342] Some writers had gone so far as to suggest that female teachers are "predisposed to treat boys ineffectively and unfairly either out of ignorance or outright hostility" and that "if we had more male teachers working in the elementary grades, the achievement of boys would improve and the tendency of children of both sexes to see school as a primarily female institution would disappear".[343]

Brophy and Good (1974) did an extensive analysis and synthesis of the literature bearing on this question of whether teachers do in fact discriminate against boys. The results of numerous observational studies indicated that if anyone is being "discriminated" against in the classroom, it is the girls and not the boys. For example, Cherry (1975) demonstrated that female preschool teachers initiated and maintained more verbal interactions with boys than with girls, and used more attention-getting words with boys.[344] Serbin et. al. (1973) found that female preschool teachers (1) directed more verbal responses and loud reprimands to aggressive boys than to agressive boys than to aggressive girls, (2) gave boys more support when participating cooperatively in classroom activities, and (3) gave boys more instructions and directions than girls. Girls, on the other hand, received more attention for dependent behaviors, such as remaining close to the teacher.[345]

Interestingly, while these teachers were aware of giving more loud reprimands to boys, they were unaware of other sex differences in their interactions. Thus, teachers differential interactions with boys and girls may be simultaneously operating on both a conscious and nonconscious level.

A whole set of observational studies at the elementary school level demonstrated similar interaction patterns (Meyer & Thompson, 1963; Sadker & Sadker, 1972; Sears & Feldman, 1974; Spaulding, 1965).[346] That is, teachers consistently had more frequent interactions with boys than with girls, both in terms of positive (e.g., reinforcing statements) and negative (e.g., reprimands) interactions.

To illustrate, a study by Spaulding (1965) will be described.[347] Spaulding developed an observational scale which classified teacher-pupil interactions into four molar categories: approval, disapproval, instruction, and listening. Each of these molar categories was further broken down into a number of smaller, "molecular" categories. Using this observational scale, ten fourth grade teachers (4 male and 6 female) and eleven sixth grade teachers (nine male and two female) were observed three mornings every week over a period of two consecutive months. Every 15 seconds an observer noted the activity level in the classroom, the molar behavior of the teacher, and the direction of the transaction, including the sex of the student with whom the teacher was interacting.

Spaulding found that the teachers in his sample demonstrated significantly more approval and disapproval to boys in contrast to girls. In addition, the teachers listened a significantly greater proportion of the time to boys. An analysis of the molecular categories of disapproval showed that boys were also more often the recipients of angry, hostile disapproval and were disapproved for violation of rules to a greater degree than girls. Girls, on the other hand, were more often disapproved for lack of knowledge or skill than boys. Table 3 below shows the distribution of teacher approval, disappoval, instruction, and listening for boys and girls along with the t ratios and p values.

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Table 3

Distribution of Teacher Approval, Disapproval, Instruction, and Listening (Spaulding, 1965, p.54)

	To Boys		To Girls		t ratio	p
	Mean %	S.D. %	Mean %	S.D. %		
Category						
Approval	53.23	12.01	33.86	8.89	5.8	.001
Disapproval	44.91	18.12	24.83	11.92	4.14	.001
Instruction	24.61	10.05	19.12	7.64	1.94	<.05
Listening	54.59	12.99	33.33	11.16	4.25	.001

While some studies have suggested that teachers tendency to interact more frequently with boys is essentially a reaction to more frequent and intense initiations by boys,[349] other studies have shown that teachers tend to initiate more interactions with boys, even after controlling for boy-initiated interactions.[350] In one study, for example, boys had more teacher-initiated work interactions, procedural interactions, and recitation opportunities (Evertson, Brophy & Good, 1973).[351] Boys also received more praise than girls for both their work and their behavior and significantly more criticism for their misbehavior. In the same study, girls exceeded boys in their tendency to seek out the teachers and create interactions with them rather than waiting for the teachers to come to them.

A Ph.D. dissertation by Edward Mulawka (1972) shed light on teachers classroom behavior specifically with regard to occupational stereotyping.[352] The purpose of the study was to investigate the various patterns of reinforcement of sex role typing taking place in the elementary school classroom, including (1) the occupational and leadership references made in the pictorial and written materials displayed about the classroom, (2) the pictorial contents of the textbooks used by the children, (3) the teachers' responses to childrens' behavior, and (4) the teacher's delegation of classroom work, play and housekeeping duties to boys and girls.

The study sampled twenty-eight different classrooms in Ontario, Canada from grades kindergarten through grade three. Data was collected through observation of classroom interaction and content analysis of written and pictorial materials.

The results demonstrated that sex role stereotyping is a common occurrence in these classrooms. Teachers' displays of pictorial and written materials and textbooks showed significantly more references to males than females in wage-earning occupations. Mulawka found two significantly different patterns of teachers' responses to boys and girls behavior: (1) when positively reinforcing children's behavior (verbal and physical aggression, academic performance, and sex role appropriate or inappropriate behavior) the teacher did not differentiate between the sexes; and (2) when negatively reinforcing children's behavior (verbal and physical aggression, academic performance), the teachers were more prone to use negative reinforcement patterns with boys than with girls.

In terms of delegation of classroom activities, Mulawka again found two patterns. That is, teachers did not differentiate between the sexes in the sex role orientation of the work or play activities that were assigned. When assigning housekeeping chores, however, the teachers delegated far more masculine stereotyped chores to boys than feminine stereotyped chores to girls.

Recent studies by Carol S. Dweck at the University of Illinois have taken interaction analysis one step further and have come up with some very intriguing sex differences. In one study, Dweck observed teachers' feedback to boys and girls in the classroom to see if there were differences not only in frequency of interactions, but in the nature of the feedback boys and girls receive.[353] Every instance of evaluative feedback from teachers to students in five classrooms was coded and analyzed in relation to sex of child. Evaluations were coded as positive or negative and as contingent or noncontingent. Contingent feedback was then categorized according to the class of behavior (conduct or work-related) upon which it was contingent. Work-related feedback was also coded as being contingent upon intellectual aspects of the task (i.e., competence or correctness) or nonintellectual aspects (e.g., neatness, instruction-following, speaking clearly). In addition, teachers' explicit attributions for children's successes and failures were recorded.

The results showed that almost all of the negative evaluation of girls' performance had to do with the incorrectness of their answers or the intellectual inadequacies of their work. In contrast, forty-five percent of the criticism directed at boys' work had nothing to do with its intellectual quality. In addition, teachers attributed boys' failures to lack of motivation significantly more than girls' failures. Thus, both the contingencies of feedback and the explicit attributions made by the teachers rendered negative evaluation more indicative of lack of ability for girls than for boys.

Dweck argued that the "unambiguous" failure feedback which girls are more likely to receive may lead to attributions to lack of ability, and subsequently interfere with their academic achievement. On the other hand, the "indiscriminate use of negative evaluation for boys may make it ambiguous and somewhat invalid as an assessment of their intellectual performance".[354] Thus, the boy may be more likely than the girl to maintain his belief in his ability, despite the overall

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sex difference in the amount of negative evaluation received.

A second study by Dweck was designed to determine the relationship between teachers' feedback and children's attributions about their ability.[355] The study experimentally manipulated the different contingencies of work-related criticism found for boys and girls in the classroom and evaluated the effects upon attributions. Specifically, children performed a task and received failure feedback that was either addressed exclusively to the correctness of their answers or was addressed sometimes to correctness and sometimes to nonintellectual aspects of performance like neatness. All children performed a second task at which they failed on the initial trials and received standardized failure feedback from the same experimenter.

The results clearly demonstrated that regardless of sex, children who receive failure feedback that is solution-specific are far more likely to view subsequent feedback from the same agent as indicative of ability than are children who receive feedback that is often solution-irrelevant. Thus, the patterns of feedback that have been observed in the classroom to distinguish teacher-boy from teacher-girl interactions can have a direct causal effect on children's interpretation of negative evaluation.

Taken together, the two studies by Dweck demonstrate that the pattern of evaluative feedback given to boys and girls in the classroom can result directly in girl's greater tendency to view failure feedback as indicative of their level of ability. Moreover, the observed sex differences in teacher-pupil interaction patterns may be having a cumulative effect, promoting different patterns of generalization to new situations. That is, girls attributions of failure to lack of ability may discourage continued "testing" of the environment, while boys' attributions of failure to the teacher or other agent may encourage testing of the environment when the agent changes. "It is far less threatening to conclude something negative about a new agent than it is to confirm something negative about one's abilities."[355] In fact, the possibility that sex differences in attributions can lead to differential transfer of failure effects to new situations was tested and confirmed in a field study and its laboratory analogue (Dweck, Goetz, & Strauss, 1976).[356]

Finally, a few studies have attempted to determine if there are not only sex differences in teacher-pupil interactions insofar as the students are concerned, but in terms of male versus female teachers as well. These data have shown that sex of teacher is relatively unimportant, that there are very few differences between male and female teachers in their behavioral interaction patterns with boys and girls (e.g., Griffin, 1972; Stasz, Weinberg, & McDonald, 1973; Sikes, 1971).[357] A recent study by Mary B. Harris experimentally studied the effect of a teacher's sex, teaching style, and department on college students evaluations.[358] Harris' results suggested that the masculinity or femininity of a teacher's style of teaching and his or her department may have greater effects on how he or she is perceived than his or her actual gender.

2. Parental Influences

In general, parents exert a tremendous influence on the occupational potential of their offspring. This influence comes in numerous forms, is both direct and indirect, conscious and nonconcious, subtle and blatant, intentional and unintentional. While it is acknowledged that there is probably some hereditary component to parental influence, this review is concerned only with those aspects of parental influence which are potentially modifiable.

This section reviews the evidence on the most prominent variables related to parental influence. These include (a) parental attitudes, expectations and sex-role socialization practices, (b) maternal employment, (c) socioeconomic status, and (d) characteristics of the family background and parent-child relationship.

a. Parental Attitudes, Expectations, and Sex-role Socialization Practices

Evidence indicates that parents begin socializing girls and boys differently almost immediately after birth, and continue doing so throughout their children's development. For example, one study found that within 24 hours of birth, parents rated daughters as "significantly softer, finer featured, littler and more inattentive" than sons even though there was no difference in size or weight between the male and female infants.[359] This study also revealed that fathers tend to engage in more sex-typing of their young infants than mothers. In another study, undergraduates looked at slides of a week-old infant named Sandy. When they were told Sandy was a girl they stereotyped the infant as "littler", "weaker" or "cuddlier".[360]

A recent study by Condry and Condry (1976) found similar patterns, and also revealed some interesting interactions between sex, experience with young children, and sex-role stereotypes.[361] A group of undergraduates watched a videotape of an androgynous (sex ambiguous) nine month old infant reacting to presentations of four different toys. Half of the subjects were told that the baby was female, and half were told that the baby was male. Subjects were asked to rate the baby for intensity of the three emotions of pleasure, anger, and fear on a semantic differential scale.

The results showed that when the child was labelled as a boy, he was perceived as showing more pleasure and less fear than when he was labelled as a girl. For males, previous experience with young children was associated with the tendency to attribute higher intensities of emotions to the male than to the female infant. The opposite was true for females. That is, female subjects high in experience with young children rated the female child higher in emotional intensity than the male child, and female subjects low in experience rated the male child higher.

The latter finding is consistent with the hypothesis that adults' reactions are not purely a function of sex role stereotypes, but are also influenced by the adult's sex and experience with children. Meyer and Sobieszek (1972) found evidence that both male and female adults attribute more characteristics, especially positive or neutral ones, to children who were labelled as their own sex.[362]

Studies by Fagot found evidence of stereotyping of toddler's behavior among both parents (1974)[363] and nonparents (1973).[364] Males were found to be more likely to stereotype than females, fathers had more sex-typed responses than mothers, and both parents restricted boys' sex-role behaviors more than girls'.

A study by Tuddenham, Brooks, and Milkovich (1974) reported evidence of stereotyping in a very large sample of 3,000 mothers of children aged nine through eleven.[365] These mothers rated their children according to traditional sex-role stereotypes on forty-three out of 100 behaviors and temperamental characteristics. Inasmuch as the mothers were asked to describe their own children, however, it is not clear whether their responses reflected relatively accurate descriptions of their children's sex-typed behaviors and characteristics (which they also may have contributed to) or whether the mothers were filtering their perceptions about their children's characteristics and behaviors through their own sex-role stereotypes.

Studies using a hypothetical child as the stimulus appear to be less confounded. For example, Rothbart and Maccoby (1966) had 130 parents of preschool children rate a tape of a child on various dimensions.[366] Half of the parents were told to imagine that the tape was of their son, and half that the tape was their daughter. They found that mothers were more permissive and attentive to the child when they imagined it was their son, and fathers were more permissive and attentive when they imagined it was their daughter.

In another study, Atkinson and Endsley (1976) had parents respond to 14 hypothetical situations involving their child.[367] Half of the situations were prejudged to illustrate feminine behaviors and the other half masculine behaviors. They found that parents do respond to their child's behavior in accordance with sex-role stereotypes. An additional finding was that both parents encourage and more highly value the behaviors exemplifying their own sex for both their sons and daughters.

In addition to sex-stereotyping, there is evidence that parents exhibit different behavioral interactions with their infant sons and daughters. For example, Lewis (1972) showed that from the very first contact, parents are more likely to caress and speak softly to their girl babies, and throw their baby boys in the air more often.[368] While the evidence is still equivocal, several studies suggest that parents tend to have more frequent verbal interactions with their daughters than their sons.[369]

In their comprehensive review of the literature on sex differences, Maccoby and Jacklin (1974) cited a great deal of evidence that parents encourage sex-typed interests and discourage sex-inappropriate behaviors and activities.[370] One important way in which parents do this is by providing their children with sex-typed toys. An early study by Rabban (1950) documented extreme sex-typing in adults' attitudes about children's toys.[371] A recent study by Rheingold and Cook (1975) examined the toy contents of children's rooms.[372] They found that boys' rooms contained more and a greater variety of toys than girls' rooms. Moreover, the toys for both sexes were still highly sex-typed. In general, the boys' toys represented activities and interests outside of the home (e.g., more vehicles, science materials, sports equipment) while girls' toys represented activities and interests in the home (e.g., baby dolls, objects for doll care).

How aware are children of their parents sex-typed attitudes and expectations? An early study by Fauls and Smith (1956) suggests that children aged four through nine were quite perceptive about their parents' sex-role stereotyping.[373] The children were shown pairs of pictures of same-sexed children. In one picture the child was engaged in a culturally sex-appropriate activity and in the other the child was engaged in a culturally sex-inappropriate activity. Both boys and girls chose sex-appropriate acitivites and perceived that their parents preferred sex-appropriate activities for them.

A recent paper by Feldman and Feldman (1976) was concerned, in part, with children's perceptions about their parents behavioral interactions with them.[374] The research was conducted with 435 sibling pairs of junior high age students. The design allowed for the comparison of differential treatment within the family by sex after controlling for the influences of school and environment of the home and family.

The researchers found a number of significant differences between the parenting of girls and boys, as perceived by the children. Girls more often perceived their mother to be warm and democratic and reported that their mother spent more time talking with them than did boys. Both boys and girls felt that their mothers favored the girls over the boys. The girls also perceived the father as being more authoritarian and punishing than did boys. The boys perceived their mothers as having higher school aspirations for them than they had for themselves, and this was true even for the high achieving boys in the sample.

A retrospective study by Celia Haas (1974) examined the perceived childhood socialization experiences, and the attitudes and behavior of adult women.[375] Spence-Helmreich's "Attitude Toward Women Scale" was administered to 63 mature women community college students, as well as to their acquaintances. All of the respondents were either presently previously married. A large majority of the women in both groups reported stereotyped childhood socialization experiences relating to career aspirations, education, recreational literature, and romantic anticipation of marriage. Haas found that those women who recalled wide social experiences and a lack of stereotyped reinforcement made wider educational choices, and reflected more liberal attitudes and behavior in their adult lives. Inasmuch as the study is essentially correlational, no causal connections should be inferred from these results.

Children are not only aware of their parents sex-role stereotyping, but they also behave in accordance with their parents' sex-typed expectations. A number of studies demonstrate that by the age of three, children are already exhibiting sex-typed preferences and behaviors (Mussen, 1969; Maccoby and Jacklin, 1974; Garrett, Cherry, Kahn, and Diepold, 1977).[376] Most of these studies have been based on comparisons of boys and girls verbal toy choices and some actual play behaviors. At these early ages, the pattern seems to be more consistent for boys than for girls (e.g., Brown, 1957; Delucia, 1963; Minuchin, 1965).[377] Also, sex-typing of children's behaviors seems to increase with age through the elementary school years (e.g., DeLucia, 1963; Hartup, Moore & Sager, 1963; Hartup and Zook, 1960).[378]

A recent study by J. H. Diepold (1977) explicitly examined the effects of parental expectations for children's sex-typed play behavior on their children's verbal sex-role stereotypes of toys, and their actual sex-typed play behavior with these toys.[379] The sample consisted of 26 female and 26 male three, four, and five year old children. The children were asked to indicate who they thought would like to play with each of 12 toys representing four traditionally masculine toys, four traditionally feminine toys, and four neutral toys: a girl, a boy, or both. Over a four month period, the children were also given the opportunity to play with the toys, and their behavior was observed. Parents filled out questionnaires indicating their expectations about how much time their child would play with each of the 12 toys, and also a measure of their own sex-typed personality traits (Bem Sex Role Inventory).

Analyses of the children's actual play behavior indicated that boys played longest with the masculine toys, next with neutral toys, and the shortest time with feminine toys. Girls, however, played longer with neutral toys than with either masculine or feminine toys, and about equally long with the latter two. Children of both sexes did verbally stereotype the groups of toys in the same manner as the adults. However, the children reached less consensual agreement about the individual toys than the adults, and were much less verbally stereotyped about the toys than the adults. The boys and girls were equally stereotyped.

As a group, the children's verbal toy stereotypes and their actual play behavior were highly consistent (78% match). Parents expected their children to play with the sex-appropriate toys, and there were no differences in expectations between fathers and mothers or between parents of sons and parents of daughters.

Parents expectations of their children's play behavior were accurate in some cases but not in others. Parents of sons were accurate in their predictions for the majority of masculine toys, but not for the feminine or neutral toys. That is, boys did spend most of their time playing with masculine toys and little time playing with feminine toys. Mothers of daughters were also accurate in their predictions of their daughters play behavior with feminine toys. Overall, parents tended to be inaccurate in their predictions about individual toys within a group, suggesting that parents may be buying toys that their children would not choose to play with if they had the choice.

A few studies have focussed on parents attitudes with regard to vocational education, and the effects of these attitudes on their offspring. For example, a Ph.D. dissertation by Harvey Rothenberg (1972) examined the attitudes toward vocational education of high school students, their parents, teachers, and businessmen in the community.[380] Rothenberg found no significant relationships between parents' attitudes toward vocational education and their children's attitudes towards vocational education. Another Ph.D. dissertation conducted the same year by Adolphus Holder (1972) also looked at parents and students attitudes towards vocational education.[381] While there was again no overall relationship between parents' and students' attitudes, significant differences were found in the attitudes of students according to their parents' occupations, incomes, educational levels, and experiences with vocational education.

A case study by William Churchill investigated the influence of parents on the development of vocational attitudes and values among adolescent males (1969).[382] The cases consisted of six white male adolescents from middle-class suburban families. Extensive interviews were conducted with the subjects and their parents, and several questionnaires were also administered.

The results indicated that for these families, the male adolescents' vocational attitudes and values "were derived from a complex of interactions within the family unit".[383] Further, it was shown that the type and kind of parental identification seems to have an effect on the development of vocational attitudes and values. A second important influencer on the development of attitudes and values was the pattern of familial communication. Those adolescents who more clearly identified with one parent and who lived in an environment of good communication with the parents seemed to be less affected by persons external to their nuclear family when compared to those for whom these conditions did not hold.

The impact of parental occupational and educational expectations on their offspring has not been widely studied. The few studies which have been conducted suggest that a great deal more research is needed in this area. In one study, Schemmel (1969) explored the relationship between parental occupational aspirations/expectations and academic achievement of second grade children.[384] The findings suggested that parents' occupational expectations, and not occupational aspirations, are highly associated with children's academic performance. In another study, Williams (1972) found that parents' expectations that their child attend college explained nearly 35% of the variance in student college plans.[385] Teachers and peers' expectations explained less than 6% and 2% of the variance, respectively. Finally, a study by Smith et. al. (1963) found that girls felt less free to choose an occupation against their parents' wishes than did boys.[386] Also in the same study, children from Japan and the Philippines felt they possessed less freedom to go against their families' occupational expectations than did their American counterparts.

b. Maternal Employment

Of all the parental factors that affect girls' occupational potential, mother's employment status has received the greatest attention. Research on maternal employment effects has found considerable evidence that daughters of working mothers hold more favorable attitudes toward work than do daughters of non-working mothers (e.g., Peterson, 1958; Almquist and Angrest, 1970, 1971; Angrest, 1972; Hoffman, 1963; Stolz, 1960; Wallston, 1973).[387]

As pointed out by Macke and Morgan (1974), however, much of this research has been based on white college samples, and therefore is not necessarily generalizable to other populations.[388] They noted that working mothers who have daughters who are able to enter (often selective) colleges and universities probably represent those mothers who have been highly successful (at least from their daughters' viewpoints) in combining their work and family roles. Such select populations probably have a higher proportion of working mothers who are also positive role models than would be representative of the general population of working mothers.

Work by Grace Baruch (1972) suggests that a daughter's acceptance of her mother's role as a possibility for herself depends on how satisfied she feels her mother is with that role.[389]

> "Because of the crucial process of identification, it is the maternal model's attitudes, experiences, and problems with respect to work that are viewed as the major determinants of whether a woman will associate negative consequences with a career commitment."[390]

In a sample of 86 college females, Baruch found that maternal employment alone was not significantly related to the students' attitudes towards a dual role pattern for women. Instead, their attitudes depended on whether they perceived their mothers as endorsing a dual role pattern, and on how successfully their mother had integrated her dual role. "Thus, if a subject's mother had worked but had also experienced negative personal consequences because of her career, the subject evaluated women's competence highly but was unfavorable to the dual role pattern."[391]

Mother's satisfaction with career and life has also been found to be a mediating variable in determining daughter's career aspirations. Frieze, Parsons and Ruble (1972) hypothesized that if a mother is perceived as satisfied with the primary role of homemaker, then the daughter will have a lower level of aspiration for herself than if the mother is seen as unsatisfied with the role of homemaker.[392] Likewise, a daughter who perceives that her employed mother is satisfied was predicted to have higher career aspirations than a daughter who perceives that her employed mother is dissatisfied.

As predicted, Frieze et al. found that mothers with careers and mothers who were dissatisfied with their (homemaker) lives tended to have college-aged daughters with high career aspirations. Also as predicted, women with satisfied mothers who did not work tended to have especially low aspirations. Contrary to prediction, however, dissatisfaction in mothers who worked was also related to high levels of aspiration in this sample of college women. The researchers offered the explanation that many of these dissatisfied mothers were probably underemployed college-educated women who encouraged their daughters to aspire to the careers they themselves were prevented from entering.

Baruch (1972) as well as others have found support that maternal employment is associated with higher estimations of female competence. For example, Vogel and associates (1970) compared the responses of 73 undergraduates whose mothers were employed to 47 undergraduates whose mothers were homemakers.[393] They found that the presence of an employed mother led offspring of both sexes to perceive less of a distinction between the two sex roles. For each sex, maternal employment upgraded the perceptions of subject's own sex with respect to those characteristics seen as socially desirable for the opposite sex. This led to the inclusion of many competency-related attributes in female's perceptions of the typical adult female.

One of the few studies to examine the effects of maternal employment on younger females was conducted by Joy Query (1975).[394] Query studied the impact of maternal employment on the academic achievement of adolescent girls. Based on a sample of 225 white ninth grade students, Query found no statistically significant differences in the academic performance (as measured by the Iowa tests) of those children who had mothers who were or were not employed.

However, when Query isolated the type of maternal employment and the education of the mother, significant differences emerged, and these differences were much more significant for the girls than for the boys. That is, those girls whose mothers were employed in a professional occupation (e.g., teaching, nursing), and those girls whose mothers had a college education scored significantly higher on the Iowa tests than those whose mothers were employed in non-professional occupations, or did not have a college education. In fact, the daughters of mothers who were college graduates had the highest scores in the sample, while this was not a significant variable for the sons of college-educated mothers. These findings led Query to the conclusion that "whereas the educational and occupational level of the mother may have some positive bearing upon her adolescent son's academic performance....her level of education and occupation either taken together or separately are critically important for her adolescent daughter".[395]

At least two studies have found that daughters of employed mothers are more likely to aspire to traditionally masculine occupations than daughters of nonworking mothers (Douvan, 1963; Tangri, 1972).[396] For example, in a sample of 200 senior college women, Sandra S. Tangri (1972) found evidence of role modeling of more educated working mothers among those women who had non-sextypical occupational choices (Role Innovators).

Various explanations have been suggested to account for the influence of maternal employment on daughters occupational potential. Peterson (1958) suggested that it is little more than the result of direct learning from maternal values and example.[397] Maccoby (1966) attributed it to higher intelligence resulting from greater freedom "to wander and explore".[398] Douvan (1963) suggested that it is the result of parental encouragement of greater autonomy and independence.[399]

Finally, DePree (1962) pointed to higher achievement motivation as an intervening variable.[400] Tangri (1972) noted that in order for the childbearing practices associated with higher achievement motivation to take full effect, however, they must be accompanied by a parental attitude that achievement outside the home is "a relevant and enjoyable activity for women".[401] Consistent with Query's finding of higher academic achievement in daughter's of college-educated women, Tangri notes that such attitudes tend to be more prevalent among more educated parents.[402]

Jeanne Marecek (1976) reported a longitudinal study, "Predictors of Women's Career Attainment", in which she attempted to tie together a number of the above variables.[403] The data was collected between 1966 and 1974 on a select sample of "unusually talented, motivated and advantaged"[404] young women. For these women, lack of financial resources, education or innate abilities was relatively rare, and therefore none of these could be considered significant deterrents to occupational attainment. Rather, Marecek was concerned with the prevalence and impact of learned attitudes and beliefs about women, work, and female roles. Specifically, three factors were considered in relation to career decision-making and the implementation of a chosen career: maternal employment, sex-role ideology, and occupational values.

Three questionnaires were administered to a sample of 220 women in their senior year of high school, senior year of college, and again either 6, 18 or 30 months after graduation from college. Information was gathered with regard to the subject's sex-role ideology, value systems regarding work, current status and aspirations regarding educational attainment, work, marriage and childbearing. In addition, information was gathered with regard to family background and demographic characteristics, retrospective perceptions of the mother's role and role satisfaction, and of parental aspirations for the subject's education and adult role.

The results revealed a number of significant effects associated with maternal employment. About 30% of the mothers had held paid jobs during their daughter's adolescence. Most of the mothers were college graduates, and there were no differences in the educational levels of those mothers who were and were not employed. Thus, the differences could not be attributed to differences in mothers' educational backgrounds alone.

Daughters of working mothers, when compared with daughters of nonworking mothers, were more likely to (a) graduate in the Honors program (an intensive, independent course of study); (b) have chosen a career by the time they graduated; (c) have made plans for graduate school; (d) expect to postpone marriage and childbearing longer; (e) have entered graduate school; and (f) regard self-fulfillment as an important value. "In summary, daughters of employed mothers seem to have achieved at higher levels and to be more committed to a future career than daughters of unemployed mothers."[405]

Marecek attempted to determine why daughters of employed mothers show this pattern of higher aspirations and achievement by comparing

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the two groups of daughters' retrospective impressions of their mothers' roles and aspirations. She found that daughters of employed mothers reported that their mothers conformed less to the traditional female role. However, daughters' reports of their mothers' degree of control over family financial decisions and mothers' satisfaction with family and household responsibilities did not differ according to whether or not their mother was employed. Furthermore, daughters of employed and unemployed mothers reported that their mothers held similar attitudes about the appropriateness of employment for married women. While both employed and unemployed mothers hoped their daughters would hold full-time jobs, employed mothers were more likely to hope their daughters would have professional careers.

Because of the many similarities found between daughters' perceptions of employed and unemployed mothers, Marecek rejected a simple role-learning or identification explanation. She also rejected an explanation which simply focusses on maternal aspirations for her daughter. Marecek's conclusion was that while maternal employment clearly is an impetus to women's occupational aspirations and achievement, it is not yet possible to determine why this is the case.

A recent study by Anne Macke and William Morgan (1974) further complicates the picture with a much more representative sample of women. These researchers noted that in addition to being positive role models, working mothers can also represent negative role models by exhibiting unhappiness and/or inadequacy in performing the dual role. Moreover, both working and nonworking mothers may influence their daughters negatively by means of /traditional/ "norm-setting". Specifically, the researchers were interested in determining if and to what extent the determinants of work orientation, including role modeling and norm-setting, differ between blacks and whites.

The sample consisted of 1,067 high school senior women and a weighted sample of 258 mothers. Forty-two percent of the girls in the study were black.

The results indicated that the black women had a significantly higher work orientation than the white women, "probably reflecting different family experiences and different perceptions of the mother's role rather than different career aspirations".[407] The blacks' modal choice was to work all the time, whereas whites planned to work after their children had entered grade school.

A regression analysis revealed that, contrary to other studies, having a currently employed mother significantly lowered a black daughter's work orientation. No such effect was found for whites. When Macke and Morgan decomposed this negative maternal employment effect, they discovered that both the role-modeling and the norm-setting explanations were applicable. For example, black working mothers were only found to have negative effects if they held blue-collar (i.e., low status) jobs, and usually these women were employed in the very undesirable (in the view of young black women) occupation of "cleaning lady". In addition, black working mothers had negative effects only if they worked part-time or did not work when their daughters were young. According to Macke and Morgan, both of these categories represented working mothers who were most likely to transmit the norm that work is a secondary role for women.

Taken together, these studies lead to the conclusion that there is no unconditional or unidirectional positive or negative effect of maternal employment on daughters' work orientations. Rather, both the significance and the direction of the maternal employment effect is mediated by other characteristics of the mother. Other things being equal, the effects are likely to be positive when the mother is relatively satisfied with her career, comfortable and competent in her dual role, and when she transmits positive normative messages about the dual role.

c. Socioeconomic Status

A great deal of evidence points to socioeconomic (SES) differences in aspects of the occupational potential of young women. Not only are there SES differences in occupational choice, but there are also differences in the reasons students give for desiring to enter various occupations (e.g., Ginzberg, 1951; Hollingshead, 1949; Smelser, 1963),[408] in their educational aspirations (Bordua, 1960; Sewell, Haller, and Straus, 1957),[409] and in their choice of school curricula (Warner, Havighurst, and Loeb, 1944).[410]

Clark (1967) examined the occupational preferences of lower and middle class girls and boys in the third through sixth grade.[411] He found a significant SES by sex interaction. That is, while middle-class boys expressed a greater preference for professional occupations than lower class boys, it was the lower-class girls who expressed a greater preference for white-collar and professional occupations compared to the middle-class girls. More careful examination of the responses, however, revealed that the fundamental difference between the lower-class and middle-class girls was that the lower-class girls did not perceive of "housewife" as a separate occupation, whereas this was the third-ranking "occupation" chosen by the middle-class girls. The majority of girls in both classes wanted to become either teachers or nurses, both of which are considered "professional" occupations.

Creason and Schilson (1970) studied the occupational choices of sixth-grade children.[412] They found that the majority of students selected occupations at levels that were higher than their fathers' occupational levels. Unfortunately, sex differences were not discussed.

Stephenson (1955) examined the occupational aspirations and plans of ninth graders in relation to the socioeconomic status of their father's occupation.[413] The results demonstrated a marked difference between occupational aspirations and plans, the latter more nearly approximating the fathers' occupational levels. Thus, while all students tended to concentrate their aspirations in the professional category, the students in the lower socioeconomic levels lowered their sights when describing their occupational plans.

Shirley Perinchief (1975) investigated the influence of socioeconomic level and parents' aspirations on adolescent girls' occupational aspirations.[414] The results indicated that girls from the lower socioeconomic level had more sex-stereotyped occupational aspirations than middle- or upper-class girls. Perinchief also found highly significant positive correlations between the adolescent girl's aspirations and her perception of her mother's aspirations for her ($r=.39$) as well as her father's aspirations for her ($r=.42$).

Two additional studies focussed on the relationship between socioeconomic status and the occupational aspirations of women high school seniors. Picou and Curry (1973) studied the impact of several structural (socioeconomic level, region, and race), interpersonal, (parental encouragement to attend college), and behavioral (academic performance) variables on female adolescents' occupational choices. They found that both residence and socioeconomic status were related to the girls occupational choices. That is, urban and upper socioeconomic status females manifested higher status occupational choices than females from rural and lower socioeconomic status categories.

Picou and Curry also found significant positive relationships between parental encouragement to attend college, academic performance, and occupational choice. These findings suggested "that the occupational choice process of females is related to personal estimates of self-competency and achievement within the educational institution".[416]

McLaughlin, Hunt, and Montgomery (1975) examined the impact of SES on the career aspirations and attitudes of women high school seniors.[417] The data came from a nationwide survey conducted in 1974 (N=1036).

The findings indicated that SES affects the occupational/ educational aspirations of women in a similar manner as it does mens'. With regard to education, women from high and middle socioeconomic levels were more inclined to attend four-year colleges, whereas those in the lower level favored community colleges and technical schools. When considering occupational goals, women with high SES emphasized selecting a career that would allow them to achieve personal goals and skills, whereas women with a low SES stressed security.

While traditional (sex-stereotyped) careers were still prominent at all SES levels, it was the women at the low SES levels who were the most likely to select them. The researchers concluded that despite women's new opportunities for employment, "their perceptions, values, and goals have followed long-prevailing patterns of differences based on socioeconomic milieu".[418]

A Ph.D. dissertation by Donald Bechtold (1969) revealed some interesting relationships between female high school seniors' occupational choices and fathers' occupations.[419] Specifically, Bechtold found a tendency for girls choosing occupations in the General Culture, Science, and the Arts and Entertainment fields to have fathers who were employed in these fields, and who had higher level occupations, earn more money, and who were more educated when compared with girls who choose occupations in the Service and Organization Fields. The girls in the former categories were also likely to expect to postpone marriage longer. These relationships did not hold for the boys in this study.

A considerable amount of evidence attests to a sex by SES interaction in educational aspirations and attainment. That is, while high SES women are almost as apt to aspire to and attend college as are men of similar SES, women at lower SES levels are considerably less likely to aspire to and attend college than are men at comparable SES levels (Cross, 1972).[420] For example, Patricia Cross found that while 40% of the high-ability (top quarter) females from the lowest socioeconomic quartile failed to enter college, only 25% of their male counterparts did so.[421] Hilton and Berglund (1971) also found that high-ability boys of low parental socioeconomic status were more likely than girls of similar ability and status to enter college.[422] Cross concluded that "the largest reservoir of academically superior women who are not now attending college consists of women from the lower socioeconomic levels".[423]

Research evidence suggests that these differences in educational aspirations and attainment reflect differential stress by parents of lower socioeconomic status on the importance of education for their sons and daughters. For example, sociologist Mirra Komarovsky (1962) found that blue-collar workers and their wives valued college education for their sons but viewed it as a "dispensable luxury" for their daughters.[424] In another study, Froomkin (1970) found that college-educated mothers had equivalent educational aspirations for their sons and daughters while lesser-educated mothers had higher educational aspirations for their sons than for their daughters.[425] Cross (1972) suggested that these differences reflect the general tendency for greater sex role stereotyping among the lower social classes.[426]

Another reason why parents of lower socioeconomic status may be more likely to stress education for their sons than for their daughters is that they simply have less financial resources to expend on their children's education. Consistent with this explanation is the finding by Baird (1973) that at all levels of undergraduate academic achievement, financial difficulties were cited by more women than men as a reason for not immediately entering graduate school.[427] Findings by Johnstone and Rivera (1965), however, suggest that lack of money is as much of an obstacle for lower class men as for lower class women.[428] Their results suggested that is is the middle-class woman who is more likely than the middle-class man to let lack of money prevent her from pursuing additional education.

Social class differences in socialization practices is still a third factor that may contribute to social class differences in the educational aspirations and attainment of women. For example, Kagan and Moss (1962) found some evidence of a relationship between mother's social class and her behavior toward daughters, but not sons.[429] Better educated mothers were found to be "more critical and more acceleratory" toward their 6 - 10 year old daughters. In addition, Kagan and Moss found a highly significant correlation (r=.69) between the educational level of mothers and "intellectual concern" as well as achievement behavior in their adult daughters.

Finally, adequate exposure to information and opportunities for further education may contribute to lower class womens' inferior educational aspirations and attainment. Support for this proposition comes from Lopata (1973) who found evidence of an inverse relationship between amount of social isolation and educational level among urban women.[430]

So far, this section has addressed itself to the nature and/or extent of socioeconomic differences in aspects of occupational potential. A recent study by Goodale and Hall (1976) addressed itself to the process by which these socioeconomic effects come into being.[431] That is, the research examined social psychological factors which were hypothesized to mediate the relationship between social origin and educational and occupational attainment.

Specifically, Goodale and Hall hypothesized that students' work values, defined as attitudes toward work in general, and perceptions of parental influence with regard to education were important mediating variables. Work values were seen as important because of evidence indicating a relationship between students' educational/occupational plans and internalization of parents' "get ahead" values (e.g., Kahl, 1953).[432] More recently, McCall and Lawler (1974) provided evidence that high school students internalize the work values of their parents and use them as a basis for their educational and occupational plans.[433] Interestingly, a study by Kinnane and Bannon (1964) as well as others have found that daughters from lower SES families have significantly stronger work value orientations than daughters from higher SES families.[434]

Parental influence was considered important because of considerable evidence indicating a relationship between parental stress on education and students educational and career aspirations (e.g., Bordua, 1968; Williams, 1972).[435] Parental stress on education, or lack of it, is a particularly important variable for women, as we have already seen.

Subjects were 437 high school sophomores in a northeastern city, representing the full range of socioeconomic levels. Questionnaires were administered requesting information about education and occupations of subjects' parents, parental influence, and educational and occupational plans.

Consistent with some of the studies reported earlier, significant sex differences were found in the students perceptions of their parents interest in and pressure for their college education. Boys reported significantly more parents' interest in their schoolwork and pressure than did girls, although plans to attend college and level of aspired occupation were approximately the same for males and females. Thus, although both boys and girls had similar goals, the boys perceived more parental support of those goals.

Path analysis revealed that the paths for males and females differed dramatically. For males, the basic path linking social origin to career plans was: parental background → student's college plans → students occupational plans. Contrary to predictions, students work values did not mediate the relationship between parental background and career aspirations. Students' perceptions of parents interest in students' schoolwork and parents' hopes that their child will attend college did serve as mediators. Incorporating these two aspects into the model led to the following description of the path for males.

Parental Background → Parents' Interest in Student's Schoolwork → Parents' Hopes for Student's College → Student's Own College Plans → Student's Planned Occupation

In general, the path for females was considerably simpler than for males. Of particular note is the fact that for girls there was no link from parental background to the remainder of the path. Fathers' occupation was not significantly related to any other variable, and none of the educational and occupational variables was linked to parents' interest as perceived by the girls. Of the four parental background variables, only mothers' occupation was related to work values, but no other variables in the basic path were associated with work values.

Based on these data, Goodale and Hall came to the conclusion that girls are more independent of the socioeconomic background of their parents in formulating their career aspirations, and that their career plans may be more dependent upon their own goals and ambitions than on those of their parents. "Girls, in short, are less likely than boys to inherit the career attainments of their parents."[436]

Inasmuch as several of Goodale and Hall's findings were inconsistent with previous research (e.g., equivalent educational and occupational aspirations for males and females), the study should be replicated. Based on just this one study, it is impossible to reach any firm conclusions on the linkages between socioeconomic status and girls' occupational potential.

d. Characteristics of the Family Background and Parent-Child Relationship

Several of the theories prsented in Part Two pointed to patterns of childhood experience with parents as important contributors to later occupational choice. The most prominent of such theories was that of Roe (1957), who hypothesized that such early patterns are the major determinant of whether an individual's occupational choice turns out to be people-oriented, or non-people oriented.[437] For example, overprotected children were hypothesized to rely heavily on their parents' occupational expectations. In contrast, parental rejection was hypothesized to result in agressiveness and a relative preference for non-people oriented occupations.

The evidence for Roe's theory, as indicated earlier, is shakey at best. For example, a Ph.D. dissertation by George Appleton (1969) found no support for any of four hypotheses generated by Roe's theory in a sample of 425 eighth grade students.[438]

Appleton did find evidence of significant differences between parents' treatment of their sons and daughters, however. For both the mother and the father, parent-child relationships with girls were perceived (by the girl) as significantly more protecting, rewarding, and loving. Boys perceived their relationships with their fathers as significantly more punishing and demanding than did girls. Moreover, boys perceived both their mothers and fathers as more rejecting and neglecting than did girls. It would seem on the surface that these data do support Roe's theory, inasmuch as boys, in general, choose more nonpeople-oriented occupations than do girls. However, there was no statistically significant association within each sex between perceived parent-child relationship and category of occupational choice (i.e. people-oriented vs. nonpeople-oriented).

One additional intriguing sex difference emerged from these data. Boys choosing occupations characterized as toward non-persons perceived significantly less opportunity for interpersonal activity than did girls making the same occupational choices. While girls perceived equal opportunities for interpersonal activity in person-oriented and nonperson-occupations, boys in the two groups differed significantly on this variable. This sex difference probably reflects a "social desirability" and/or "dissonance reduction" effect. That is, the girls attribute characteristics of the culturally accepted feminine role to their occupational choice both in order to make it appear more "socially desirable" and to reduce "cognitive dissonance" which arises as the result of choosing a traditionally masculine occupation.

While it was not the major thrust of his theory, John Holland (1962) also described parental influences on offspring's occupational choice.[439] Holland assumed that "each parental type provides a large cluster of environmental opportunities, as well as some deficits which extent well beyond parental attitudes" (1973, p.11).[440] For example, "realistic parents (their child-rearing attitudes aside) engage in characteristic realistic activities in and out of the home; surround themselves with particular equipment, possessions, materials, and tools; and select realistic friends and neighborhoods. At the same time, realistic parents tend to ignore, avoid, or reject some activities and types more than others....In short, parents create characteristic environments that include attitudes as well as a great range of obvious environmental experiences."[441]

Holland also recognized the two-way relationship between the child's influence on the parent and the parent's influence on the child..."children create their own environment by their demands upon parents and by the manner in which parents react to and are influenced by children."[442] Work by Bell (1968) provides evidence of this sort of reciprocity in parent-child relationships.[443]

Holland (1962) examined empirically the relationship between several family background variables, such as parents occupation, education and offspring occupational code.[444] A significant relationship was documented between fathers' occupation and offsprings' occupational code. These data should again be interpreted as indicative of a reciprocal relationship only; that is, no conclusions about direction of causality can be inferred from these data.

Eariler work by Holland was was more specific in its conceptualization of parental influence on offsprings' occupational choice. For example, Holland (1962) developed the Parental Attitude Research Instrument (PARI) to assess the degree to which a parent can be characterized as "intrusive", "equalitarian", and so forth.[444] Studies based on this instrument revealed some relationships between parents' behavior and offspring's personality orientations. For example, children choosing "conventional" "and realistic" occupations tended to have "authoritarian" parents while more scientifically oriented children tended to have "democratic" parents. Since many of these correlations were low, however, they did not justify gross generalizations.

Holland's approach to fathers' influence was somewhat different. Fathers were asked to rank order nine goals they held for their child and their hopes for their child's eventual income. The results revealed that fathers of sons in the "realistic" category valued ambition and hoped their income would be considerable. Fathers of sons in the "investigative" category valued curiousity, while fathers of "social" children valued self-control. Fathers of "conventional" sons hoped they would be "happy and well-adjusted," while fathers of "enterprising" sons valued happiness and adjustment plus popularity. Finally, fathers of "artistic" sons valued curiousity and independence. The findings for girls, though not quite so clear and distinct, were in the same general direction.

Several researchers have attempted to distinguish between the family background characteristics of women choosing traditional vs. nontraditional careers or lifestyles. For example, Tangri (1972) examined the "relationship with parents" of "role-innovative" college women, i.e., women choosing "non-sextypical" occupations. [445] She found that in contrast to traditional women, role innovators tended to have "substantial cognitive distance from both parents, warm feelings toward mother, but some perceived similarity to father." [446] Tangri interpreted these findings as indicative of an association between role innovation and "autonomous relationships with both parents."[447] In such relationships, disagreements and areas of distance coexist side by side with agreements and areas of closeness.

In another study Theodora Patrick (1973) examined the family background characteristics of women who enter male-dominated professions. [448] Young adult women who were engaged in graduate training for careers as lawyers, doctors, architects, and scientists comprised the professional sample. These women were contrasted with a sample of full-time homemakers, all of whom had college degees.

In apparent contrast to Tangri's findings, Patrick found no support for the hypothesis that parents of professionals are more autonomy-permitting and less controlling than parents of homemakers. In fact, fathers of professionals were reported to be more psychologically controlling than were fathers of homemakers. Patrick also found no support for the hypothesis that professional women have a greater need for autonomy than homemakers.

In sum, these studies suggest that family background characteristics and parent-child relationships may extent an influence on women's occupational behavior, but probably not to the extent originally theorized by Roe. Moreover, there is not enough consistent research evidence to draw any firm conclusions about the nature of the relationship between various family background characteristics and and particular patterns of occupational behavior.

3. Peer, Visual Media, and Other Socialization Influences

It is beyond the scope of this review to cover all of the socialization influences on girls' occupational potential. The purpose of this section is to point out the most significant of the remaining influences, and to briefly refer to the studies which have documented influences on the aspects of girls' occupational potential discussed in Part Three of this review.

a. Peer Influences

The importance of peer influence, in general, has been documented in numerous studies by noted child psychologist Urie Bronfenbrenner (e.g., Bronfenbrenner, 1967).[449] Other child psychologists have demonstrated peer reinforcement of sex-role behaviors in children as young as three years old, (e.g., Fagot & Patterson, 1969).[450] There is some evidence that girls are even more sensitive to peer and sibling influences during childhood than are boys (e.g., Feldman & Feldman, 1976).

A number of recent studies have demonstrated the importance of (perceived) male support for females to break away from traditional sex roles and to pursue nontraditional careers (e.g., Frieze, Parsons & Ruble, 1972;[452] Hawley, 1972;[453] Westervelt, 1970).[454] For example, Peggy Hawley (1972) found that there is a significant relationship between the careers women choose and their beliefs regarding men's view of the feminine ideal.[455] Women preparing for traditionally female careers, such as teaching, were more likely to believe that men in their lives dichotomize attitudes and behaviors into male-female categories, while women preparing for nontraditional careers, such as math and science majors, were more likely to believe that men do not see sex as a determinant of attitudes and behaviors. Furthermore, women who were planning to enter male-dominated careers were more concerned with male support compared to those with traditional career goals. Only ten percent of these women said they would pursue their present (nontraditional)goals over the objections of significant men in their lives.

Bailyn (1964) referred to men's attitudes as the most important source of support or hostility for the professional woman.[456] Katz (1968) provided empirical support for this contention.[457] In a sample of Stanford University women students, Katz found that the single largest influence on women's occupational decisions were the attitudes of their husbands, fiances, and boyfriends. Similarly, Edwards (1969) found that the values of marriage-oriented women related most strongly to their perception of their boyfriends values, in comparison to other possible influencing factors.[458] Among already married women, Wise and Carter (1965) found that wives perceptions of their husbands' attitudes toward employment was the factor most influencing their own attitude.[459]

Using a very different research approach, Farmer and Bohn (1970) provided still more support for the importance of women's perceptions of men's attitudes.[460] These researchers were able to reduce "home-career" conflict simply by telling women to "pretend" that men like intelligent women and by suggesting that a successful combination of home and career was indeed possible to achieve.

Finally, a study by Ellis and Bentler (1973) suggested that "the opposite sex, rather the same sex, may serve as a primary frame of reference for a person's self-concept."[461]

Male support appears to not only influence women's decisions about whether or not to work and at what occupations to work, but also appears to influence women's choices about the acquisition of educational means to occupational attainment. For example, Westervelt (1970) found that a majority of women who were planning to continue their education or return to work considered "husband's approval" as the most important factor in their decision.[462] Among respondents who were not planning to return to education or work, 17% gave "husband would not approve" as the most important reason, and 32% gave "children need me at home" as the reason. Similarly, Feldman and Newcomb (1969) found that married women undergraduates were more likely than married men to feel that emotional pressure from a spouse would cause them to drop out of graduate school.[463]

Among married women at the highest professional levels, a supportive husband seems to be of almost overriding importance. Lopate (1971) stated that:"'The right husband' is one of the most common requirements set by women physicians themselves for combining a medical career with marriage."[464] Psychologist Judith Bardwick (1971) suggested that the reason for this may be that husbands must be confident enough in their own achievements so as not to feel threatened by their wives' professional commitments and accomplishments.[465]

Finally, Tangri's (1972) study provided evidence that romantic relationships are just as important to role innovative women as to traditional women.[466] If this finding is taken together with the overwhelming evidence that women place great importance on the attitude of their romantic partner towards women's roles, the conclusion that males' attitudes are paramount becomes inescapable. If we juxtapose these two findings with the evidence presented in Part Three that males at all ages are significantly more sexist than females in their attitudes about women's roles, the profound seriousness of women's "dual role" conflict becomes all too clear.

b. Visual Media and Other Socialization Influences

The significance of the visual media as an agent of occupational socialization is increasingly being recognized. Television, newspapers and magazines, textbooks and instructional materials all act as socializers by conveying occupational information and providing occupational role models. The most recent evidence indicates that each of these vehicles of occupational socialization is replete with sex stereotypes, and thereby functions to restrict, rather than enhance, women's occupational potential.

1. Television

A recent estimate indicated that the average student watches about 15,000 hours of television before graduating from high school. [467] Studies show that frequent television viewing begins for most children at age three and remains high until at least age twelve (Schraman, Lyle and Parker, 1961; [468] Lyle & Hoffman, 1971). [469] Studies also clearly demonstrate that children model their own behavior after the behavior they have observed on TV (e.g., Liebert, Neale, and Davidson, 1973). [470]

Several recent studies have demostrated the pervasiveness of sex-role stereotyping in prime-time TV programming (e.g., Women on Words and Images, 1975; [471] Franzwa, 1977). [472] For example, Women on Words and Images found that prime-time television conveys the message that men are more dominant, authoritative, and competent.

2. Newspapers and Magazines

Studies by Moser (1962), [473] Gutsch and Logan (1967) [474] and Goodson (1970) [475] have demonstrated the influence of the news media on children's occupational knowledge. Other studies have once again documented the pervasiveness of sex-role stereotyping in these media (e.g., Franzwa, 1975). [476]

3. Textbooks and Instructional Materials

Despite some very noteworthy advances in curriculum development in recent years, the textbook remains "the single most important teaching tool" (Black, 1967). [477] A recent survey of about 24,000 schools revealed that about 90 to 95 percent of school time is either directly based on or structured around the use of instructional materials, including textbooks (Komoski, 1975). [478] Wirtenberg and Nakamura (1976) demonstrated the striking parallel between the ontogeny of occupational aspirations and sex-biased educational practices, including sex-biased textbooks. [479]

A comprehensive review of the literature on textbook biases documents the pervasiveness of sex biases in textbooks at every level and in every substantive area (Wirtenberg, 1978). [480] This review showed that textbook biases against females fall into three major categories: invisibility, stereotyping, and inferiority. These biases are evident in the most recent studies (e.g., WOWI, 1975) [481] and across a wide-range of publishers and geographical regions.

Invisibility was documented in terms of overall visibility of males and females in both written text and in illustrative materials. Beyond simple inequitable proportional representation of males and females, male characters were found to be far more likely to be depicted in central roles in the stories in which they appeared. Even when girls were represented in illustrations, they still tended to be "invisible" because they were drawn smaller, in the background, or passively watching what the males were doing Invisibility of females was quite apparent in biographies; here they were outnumbered by ratios of six males to every one female biography.

Sex role stereotypes in textbooks were manifested in the grossly disparate occupational roles of men and women. Men were shown much more often in occupational roles, as well as in a much wider range of occupations. Conversely, the few times that women were shown to appear in occupational roles, these were limited to only the most sex-typed occupations (e.g., teacher, nurse).

Stereotypes were also the major determinant of the behaviors, traits and interests exhibited by the characters in the stories. Males exhibited far more aggressiveness, problem-solving, physical activity, cleverness, strength, heroism, elective generosity, unearned rewards, adventurousness, and imagination than did females. Females consistently demonstrated more passivity, dependence, self-sacrificing altruism, goal restriction, domesticity, incompetence and victimization by the opposite sex, than did males. These findings were supported by frequency counts of behavioral manifestations, in frequency counts of who played the central role in stories with themes centering around these behaviors and traits, as well as by innumerable quotes excerpted from a wide range of the texts examined.

The third major source of bias was found in the consistent demeaning, degrading, belittling and victimizing of females to show that they are inferior to males. One reviewer of sex biases in children's literature noted that in these books "Girls collapse into tears, betray secrets, and act upon petty and selfish motives" (U'Ren 1972, p.223).[482]

Besides their lack of character, females are shown to be lazy, incompetent, lacking in ability to think for themselves, and to act on their own initiative. Boys are frequently shown rescuing older girls and women from situations, clearly indicating their superiority.

The problem of textbook bias is often compounded in the classroom by the use of sex-stereotyped bulletin board materials, sex-segregated seating arrangements, the use of sexist language, and myriad other institutionalized sexist practices (cf. Frazier & Sadker, 1973).[483]

In sum, this section has briefly described peer, visual media and other socialization influences which may contribute to limiting girls' occupational potential. The paramount significance of male's attitudes has been demonstrated, and the problem of sex biased TV, textbooks and instructional materials has been described.

4. Summary and Conclusions

Part Four reviewed the evidence on the most important of the socialization influences on girls' occupational potential, including teachers, parents, peers, and the media.

Teachers were shown to contribute to sex differences in occupational development in a number of ways. Studies have been presented which demonstrate that teachers model sex-typed behaviors, have sex-stereotyped expectations and/or attitudes, and exhibit different behavioral interaction patterns with their male and female students. In each of these ways, teachers are (consciously or unconsciously) modifying, molding, and shaping patterns of behavior and attitudes which place limits on the occupational potential of their students.

Parents were also shown to exert tremendous influence on the occupational potential of their offspring. This influence comes in numerous forms, is both direct and indirect, conscious and nonconscious, subtle and blatant, intentional and unintentional. The most prominent variables related to parental influence were identified as (a) parental attitudes, expectations and sex-role socialination practices, (b) maternal employment, (c) socioeconomic status, and (d) characteristics of the family background and parent-child relationship.

The studies revealed that parents begin socializing boys and girls differently almost immediately after birth, and continue doing so throughout their children's development. Moreover, children have been shown to be aware of their parents sex-role stereotyping, and to behave in accordance with their parents sex-typed expectations.

While some studies have indicated that SES affects the occupational/educational aspirations of women in a similar manner as it does mens', others suggest that as a result of the general tendency for greater sex role stereotyping among the lower social classes, lower SES women may be doubly inhibited from fulfilling the their true occupational potential.

An intriguing study examined the process by which these socioeconomic differences come into being. By focusing on the social psychological factors which may be mediating the relationship between socioeconomic orgin and educational and occupational attainment, this study demonstrated that the process differs dramatically for males and females. For males only, perceptions of parents' interest in their school work and parents' hopes for their college attendance are important mediating variables. For girls, the only mediating factor between social origin and occupational choice appeared to be mothers' occupation. This finding led the researchers to the conclusion that girls are more independent of the socioeconomic background of their parents in formulating their career aspirations, and that their career plans may be more dependent upon their own goals and ambitions than on those of their parents. More research needs to be conducted to come to any firm conclusions about the relationship between socioeconomic status and women's occupational behavior.

Finally, the research on characteristics of the family background and parent-child relationship indicated that these factors certainly do exert an influence on women's occupational behavior, but probably not to the extent originally theorized by Anne Roe. Moreover, there is not enough consistent research evidence to draw any firm

Maternal employment is probably the most widely cited factor which influences girls' occupational choice. Research on this factor has provided considerable evidence that daughters of working mothers hold more favorable attitudes toward work than do daughters of non-working mothers. When considering this research, however, it should be kept in mind that most of it has been based on white college samples, and is not necessarily generalizable to other populations, Furthermore, such mediating factors as mothers' satisfaction with her work have been demonstrated to be important determiners of the significance of the relationship between maternal employment and daughters' occupational behavior.

Taken together, the studies on maternal employment lead to the conclusion that there is no unconditional or unidirectional positive or negative effect of maternal employment on daughters' work orientations. Rather, both the significance and the direction of the maternal employment effect is mediated by other characteristics of the mother. Other things being equal, the effects are likely to be positive when the mother is relatively satisfied with her career, comfortable and competent in her dual role, and when she transmits positive normative messages about the dual role.

Socioeconomic status is still a third important family background variable that has received a great deal of attention. Studies have demonstrated SES differences in women's occupational choice, the reasons women give for desiring to enter various occupations, and in the acquisition of the educational means to occupational attainment. In general, girls from the lower socioeconomic levels tend to have more sex-stereotyped occupational aspirations than middle or upper-class girls.

conclusions about the nature of the relationship between various family background charateristics and particular patterns of occupational behavior. More research needs to be conducted in this area as well.

The last section reviewed peer, visual media, and other socialization influences. The studies on peer influence pointed rather conclusively to men's attitudes, including husbands, boyfriends, and fiancés as key influences on women's occupational behavior. Inasmuch as men have been shown to be considerably more sexist in their attitudes as compared with women, the importance of modifying male attitudes cannot be stressed enough. Whether early intervention is the most promising approach for long-term modification of mens' attitudes remains to be seen.

Visual media included television, newspapers, magazines, and textbooks and instructional materials. Recent studies indicate that each of these media forms (1) acts as a significant socializing agent and (2) is replete with sex-role stereotyping and other forms of bias against females.

PART V. INTERVENTIONS TO ENHANCE ASPECTS OF GIRLS' OCCUPATIONAL POTENTIAL

During this decade, educators, researchers and others have begun to recognize the importance of early intervention, if girls occupational potential is to be improved. As a result, a number of educational interventions have been developed and introduced into the educational curriculum. These interventions vary greatly in terms of:

1) the age or grade level at which they are introduced
2) their duration
3) the nature and focus of the intervention
4) the specific apsects of girls' occupational potential they are attempting to modify
5) the measures used to evaluate the impact of the intervention.

This section briefly reviews the literature on these interventions focussing on the studies which have examined the interventions' impact on aspects of girls' occupational potential.

1. Preschool through Elementary Level

Interventions have been introduced as early as age 3 and through grade six.

Flerx, Fidler, and Rogers (1976) were successful in modifying several aspects of sex-role stereotypes in children aged 3, 4, and 5.[484] In one study, nonsexist symbolic modeling stimuli were presented in picture books to a sample of 76 white middle-class children. The intervention lasted for 30 minutes per day for five days, totalling 2½ hours. Sex-role stereotypes were measured in terms of beliefs about (1) the relative intelligence of men and women, and boys and girls, (2) children's play activities, (3) parents' work activities. The "doll-choice" technique was used.

This study revealed that some aspects of sex role stereotypes are acquired between the third and fourth year of life as are racial stereotypes. In addition, by age 3 and continuing until age 5, male children have more stereotyped beliefs than female children.

An evaluation of the intervention's impact indicated that the children exposed to the eqalitarian stories expressed fewer sex-role stereotypes than children read the traditional stories. Moreover, the intervention interacted with age and sex, such that 5-year olds and females were more favorably influenced than 4-year olds and males, respectively.

A second experiment by the same authors replicated the first and also introduced an egalitarian film intervention.[485] This study revealed that, like the picture books, the film had a strong immediate impact on reducing sex stereotyped attitudes. In fact, there was some evidence that the films had a more enduring impact than the picture books. Both studies were interpreted as supporting a social learning approach to the modification of sex-typed beliefs.

Based on these findings, the researchers concluded: "it is plausible to assume that repeated exposure to egalitarian sex role models would sustain less stereotyped attitudes... Extensive, repeated exposure to media that portray broad, flexible conceptualizations of male and female roles should be considered an effective method of abolishing restrictive dysfunctional sex role stereotypes." (p. 1006)[486]

In another study with preschoolers, Bloomberg (1974) attempted to directly modify sex role stereotyping of occupations by four and five year old children.[487] The intervention involved classroom instruction in occupational role concepts over a period of ten weeks. Sex-role sterotyping of occupations was measured by asking for gender identification of familiar and unfamiliar occupational roles. The results indicated that this intervention was not sufficient to change subjects' sex-role stereotyping of occupations, except in regard to a transfer effect on unfamiliar occupations not covered by the curriculum. Bloomberg concluded: "Had non-sexist concepts been a more pervasive part of the curriculum, had instruction lasted longer, had parents been involved in reinforcing concepts and attitudes being taught, there might have been greater change." (p. 87)[488]

A study by Greenberg and Peck (1973) was also unsuccessful in modifying preschool children's sex role perceptions.[489] This intervention involved both teacher and children's curricula. The teachers' curriculum consisted of two-hour bimonthly meetings for teachers, focussing on sex role stereotyping and the role of schools in forming sex stereotypic role expectations. The children's curriculum was the "Basic Human Needs Curriculum" focussing on "the timeless basic needs" shared by all humans.

The most comprehensive study in this area was conducted by Guttentag and Bray (1976): "Undoing Sex Stereotypes: A How-To-Do-It Guide with Tested Non-Sexist Curricula and Non-Sexist Curricula and Teaching Methods."[490] Teacher training, and the student's curriculum were introduced over a six week period. The curriculum was interspersed throughout the school day depending on the level of involvement and interest of the teacher. The sample consisted of 409 children in kindergarten, grade five and grade nine.

The findings pointed to the essential malleability of sex-role concepts, and demonstrated the extent to which even brief attempts to expand sex-roles can yield positive results for children of all ages. The critical factor appeared to be that the intervention be "thorough, well-rounded, and intense".

The results also indicated that at all ages, girls had less stereotyped views of women's occupations than did boys. Furthermore, the girls were more influenced by the curriculum than the boys. At the ninth grade level, the boys actually became more rigid in their views after the intervention.

Harkness (1973) evaluated the impact of an original occupational unit on the occupational knowledge and attitudes of elementary school children in grades 4, 5 and 6.[491] The unit consisted of six 30 minute lessons over a period of six weeks. For example, one lesson included slides of working people and a discussion; another involved role playing and occupational charades. Pre and post tests were administered on an original instrument designed to measure occupational knowledge and attitudes.

The results revealed that the occupational unit had a significant impact on all children in the study. Of the three grade levels, the fifth graders appeared to benefit the most. As in Guttentag and Bray's study, the girls achieved greater gains than the boys. Still, only a few (15%) changed their future occupational choices from their initial stereotyped feminine selections. No boys changed to traditionally feminine occupations.

Harkness concluded that all upper elementary school children can benefit from exposure to an instructional unit on occupations. Moreover, the study demonstrated that occupational knowledge and attitudes are related for upper elementary schoolchildren. Finally, the study demonstrated that I. Q. and parent's education are important correlates of elementary children's occupational plans.

An intervention by Parks (1976) also introduced a career-oriented curriculum at the elementary level (grades 3, 4, & 5).[492] This curriculum was included in the regular classroom activities over a four week period, for a minimum of eight instructional hours.

The curriculum had a significant impact on the stereotyping behavior of fourth and fifth grade girls and boys. The boys and girls in the experimental group increased career options for women without restricting options for men. At the same time, boys and girls in the control group showed an increase in their sex-stereotyping of career roles. However, as was found in other studies, the curriculum did not have a significant affect on individual sex-stereotyped career choices, for boys or girls. Parks concluded: "In the long view, the reduction in stereotyping by experimental groups may have the positive effect of causing pupils to see more career options for themselves, and it may be a more desirable outcome than increased career awareness." (p. 473)[493] The major conclusion was that "curriculum intervention in grade 4 can significantly reduce occupational stereotyping and perhaps ultimately lead to greater freedom of occupational choice, particularly by girls." (p. 473)[494]

An intervention by Bucher (1974) also evaluated the impact of a non-stereotyped occupational unit on elementary school children.[495] Bucher conducted an occupational unit "Men and Women in the World of Work," consisting of four 55 minute lessons. The lessons included filmstrips, class discussion, and role playing and focussed on the occupations that men and women engage in, the ways in which school subjects are related to occupations, and the interests, training, and talents related to occupations.

Bucher found very positive results from this intervention. The experimental group expressed significantly greater liberal attitudes toward the occupational roles of men and women compared to controls. The experimental group also had increased knowledge of occupations, and increased their preferences for traditionally opposite-sex occupations as a tentative vocational choice.

Unlike other studies, Bucher found that the intervention benefitted both sexes equally in regard to a positive change in attitudes toward sex-role stereotyping of occupations, occupational knowledge, and opposite sex occupational preferences.

Finally, Bucher found a significant relationship between occupational knowledge and expressed attitudes toward occupational roles of men and women. As knowledge increased, attitudes became less sex-role stereotyped.

Positive results were also found by Ein (1977) with a sample of 900 elementary school children.[496] This intervention involved only five role-reversed occupational stories. The results clearly demonstrated that children's sex stereotypes about occupations can be modified through the material they read in school.

In contrast to these positive results Nash (1974) evaluated the effects of a sex-role awareness course on sex-role stereotyping and sex-role anxiety of fifth graders.[497] The awareness course consisted of twelve 45-minute "experience-based" sessions, given twice a week over a six week period. Unlike the studies reported above, Nash found no effects on either dependent variable. Moreover, Nash found that the course had a polarizing effect on the boys and girls in the experimental group. Nash pointed to the need for teacher and parent involvement when introducing courses of this nature, and the need for a longer intervention.

Incorporating Nash's suggestion for greater teacher participation, Kesselman (1974) attempted to simultaneously change teachers' and students' sex role stereotypes.[498] Five female teachers participated in a workshop focusing on sex role stereotypes, and ways in which teachers could facilitate the de-stereotyping process. The teachers conducted similar workshops in their classes.

Kesselman found that the workshop had a significant effect upon the de-stereotyping of teacher attitudes, and on the sex role differentiation attitudes of students, particularly the girls. Kesselman concluded:

> "If sex role stereotypes are to change in this society, the help of all individuals who work with and care for children must be enlisted... Parents and teachers, representing the child rearing and educational systems, can be the most potent forces in the de-stereotyping of the sex roles in the eyes of their developing children and students." (1974, p. 133)[499]

The studies reviewed here point to several tentative conclusions. Additional research, in combination with more careful analyses of these studies' methods and findings, is needed. Such research may be able to suggest a developmental model encompassing the most beneficial aspects and foci of interventions whose purpose is to enhance girls' occupational potential.

The first tentative conclusion is that the pervasive sex role stereotypes and sex-typed occupational choices of young children are in fact modifiable through educational intervention, particularly for girls. Although some studies were unsuccessful in modifying sex role stereotypes, at least eight separate interventions provided concrete evidence of the essential malleability of sex-role stereotypes.

Successful interventions included nonsexist symbolic modeling stimuli presented in books and in films, classroom instruction in nonsexist occupational role concepts, nonsexist teacher training and workshops, and occupational units focussing on exposure to the broad spectrum of occupational possibilities. These positive results were demonstrated despite tremendous variation in the nature and the duration of the intervention, and despite variability in the measures used to test the effects of the interventions.

The most successful interventions appeared to be targeted for children at the upper elementary levels, particularly grades four and five, and to involve active teacher participation. Interventions at the preschool and early elementary levels appear to not be as successful, although it is not clear whether this may be the result of inadequate measurement techniques. Inasmuch as younger children's stereotypes are less sophisticated and well-defined, more attention should be devoted to developing measures which are appropriate to their level of cognitive development. It is possible that subtle changes in attitudes may have gone undetected by the fairly crude measures used in some of these studies. On the other hand, the male, female, and androgynous doll-choice technique employed by Flerx, Fidler, and Rogers may be a useful evaluation technique for young children.

Another conclusion is that girls sex-stereotyped attitudes appear to be more easily modified than boys, at least as revealed by the measures employed in these studies. Several of the researchers interpreted this finding by noting that girls may be more receptive to information contradicting sex role stereotypes because they "gain greater freedom and self-esteem from altering their views while males must relinquish something of their previously perceived superiority in moving away from a stereotyped conceptualization of sex roles. Thus, some of the boys responses in the egalitarian intervention groups may have been defensive reactions." (p. 1006)[499]

Still a fourth conclusion is that there appears to be a definite relationship between occupational knowledge and sex stereotyped beliefs and attitudes about occupations. This finding results in a strong recommendation for the inclusion of occupational units at the elementary school level.

Moreover, it is the low IQ students who appear to benefit the most from this sort of intervention. These students are also the ones who have traditionally been shown to have the most sex-stereotyped attitudes, and ultimately, to be limited to the most sex-stereotyped occupations.

A fifth conclusion is that it may be unreasonable to expect an intervention to result in an immediate modification of expressed occupational aspirations or plans. However, since the intervention may result in significant modification of the occupational roles which are viewed as available, desirable outcomes may be seen over the long term.

Finally, one study pointed to the importance of differentiating between "can" and "should" in measuring attitudes of children with respect to occupations (Ein, 1977). Children are more sex-stereotyped in their "should" responses than in their "can" responses. This is but one example of the need for more careful and systematic attention which needs to be paid to the measurement techniques employed by researchers working in this area.

2. Junior High Level

Fewer studies have been conducted at the junior high level. Of the seven studies identified at this level, only one demonstrated significant positive effects. There is a great need for the introduction of interventions at this crucial developmental stage, and for careful analysis of the relative effectiveness of different interventions.

The interventions which have been studied include a "structured vocational exploration task" in the eighth grade (Hawxhurst, 1973),[501] a "program of education and career exploration" in grades eight and nine (Olson, 1971),[502] a "career orientation program" in the ninth grade (Poulin, 1972),[503] a state-sponsored "Introduction to Vocations" course in the ninth grade (Tosh, 1971),[504] a curriculum on "Women in the Work Force" in grades 7, 9, and 11 (Vetter and Sethney, 1972),[505] and the introduction of mediated occupational information through the use of slides and audio tapes in the eighth grade (Zikmund, 1971).[506]

Interestingly, the only intervention which had a significant positive impact on students occupational attitudes was also the only one which focussed on women's occupational roles. In this study, Vetter and Sethney (1972) developed and field tested curriculum materials with students in grades 7, 9, and 11. The purpose of the unit "Planning Ahead for the World of Work" was to bring about changes in girls'

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knowledge of, attitudes toward, and plans for the world of work.

For example, one lesson, "Looking Ahead to your occupation", provided students with a chance for self-analysis, and with information about the roles of women in the labor force. "After School, What?", was a sociodrama lesson aimed at self-exploration. "What's in my future?" provided for a review of individual participants' personal occupational status.

The results indicated that students at all three grade levels acquired information about the world of work and about women's employment opportunities. Moreover, students' attitudes changed in the direction of greater acceptance of employment after marriage, and more plans to work after children are grown. A majority of students at each grade level indicated that the unit will influence their futures.

While the unit is usable at all three grade levels, the study suggested that optimal use of these materials is at the ninth grade level. Use at the seventh grade requires that emphasis be put on the occupational information contained within the unit. Later use requires more emphasis on the discussion of roles.

Leonard (1969) introduced interventions designed to induce career exploration in grades seven through nine.[507] Although no experimental analyses were performed on their impact, the interventions can provide a model for future evaluation. At the seventh grade level, work models were provided by people in the community. In the eighth grade, students explored community agencies with emphasis on job families, established room committees to formulate questions, secure speakers, and make presentations. Field trips and interviews of plants were also conducted. The ninth grade intervention was concentrated in a "Career Day". Vocational opportunities were presented by military personnel, large company training programs, college representatives, and trade schools. Group discussions were encouraged.

Leonard did not conduct any formal tests on the impact of these activities. However, he reported that everyone appeared interested in the programs and voted overwhelmingly to continue the program the following year.

It is not clear why the other interventions were unsuccessful in bringing about more changes. At least three of these studies relied on the Vocational Development Inventory (VDI) as the major instrument of evaluation, and it is possible that this measure is not sufficiently sensitive to the sorts of changes that may have been produced. Alternatively, the interventions may not have been broad enough in scope, intense enough, or sufficiently sensitive to the needs of this particular age group. Clearly, additional research is required to answer these questions.

3. High School Level

Due to time and space limitations, only a few of the many interventions at the high school level are reviewed here. An attempt is made to provide an overview of the types of interventions which have been introduced, along with their respective effects.

In a recent study Hurwitz and White (1977) evaluated the impact of sex-linked vocational information on the reported occupational choices of high school juniors.[508] Information about new occupational opportunities for women was read by 144 high school juniors, while 106 other juniors read information about opportunities in general. All students subsequently selected occupations from a list of 40 occupations that would be "most appropriate" for each of five male and five female students described in mock profiles. The results indicated that the group which received vocational information was significantly less likely to select sex-stereotypic occupations for the mock female students.

In another successful intervention, Abernathy and his associates (1977) evaluated the impact of an intensive consciousness-raising curriculum on adolescent women.[509] The consciousness-raising curriculum was offered in 50-minute class periods over 20 consecutive school days to junior and senior high school women. Experimental and control groups were constituted randomly from a pool of volunteers.

The results indicated that women who participated in the consciousness-raising curriculum became more liberal in their beliefs about women's rights and roles and also showed increases along several dimensions of self-actualization. However, these gains did not radiate to overall self-concept, as measured by the Tennessee self-concept scale.

In her Ph.D. dissertation, Vera Erickson (1973) evaluated the impact of "Psychological Growth for Women: A Cognitive Developmental Curriculum Intervention."[510] The course was specifically designed to promote movement in the developmental stages of growth of female students. The course, "A Study of Women Through Literature" followed a seminar - practicum model. Field interviewing of females throughout the life span provided a means of viewing the process of female development through different ages, stages, and tasks. Also, the curriculum provided an historical as well as a developmental perspective on female rights and roles. The curriculum thus stressed on on-going integration of field interview data, works of literature, and an examination of "the self".

The results indicated that the curriculum was successful in promoting positive movement on the psychological growth stages. Positive movement was seen on Kohlberg's Moral Maturity Scale, on the Loevinger ego scale (from stage 3 - conformist to stage 4 - conscientious and 5 - autonomous) and on the Spence Attitudes toward Women Scale (toward attitudes of equality and choice for women). Supporting evidence was also provided by clinical data from student journals, classroom tapes, affective learning questionnaires, and attendance.

Doran (1976) evaluated the effects of assertion training within a career awareness course on the sex-role self-concepts and career choices of high school women.[511] She compared one group receiving assertion training within a career awareness course with another receiving the career awareness course only, and with a third no treatment control group. The groups met for seven weekly three-hour sessions. The assertion training lasted for five 1½ hour sessions.

The findings indicated that subjects in all three groups were already in the androgynous range (on the BSRI) and had a career orientation and a desire to combine career and family roles. Even though this pretreatment career orientation may have diminished the measurable impact of the career awareness course, significant observable differences in the predicted direction were evidenced by the two experimental groups.compared to the control group. Moreover, the study supported the hypothesis that the subjects in the career awareness plus assertiveness training condition (CA + AT) would change their androgyny scores more than the subjects in the career awareness only condition (CA). The CA + AT group also evidenced a significantly greater self-acceptance of both masculine and feminine characteristics, compared to the CA group.

In contrast to these highly successful interventions, at least two studies at the high school level found no significant results. Dodson (1973) found no differences between three types of vocational materials presenting female role models on occupational exploration and attitudes of eleventh and twelfth grade students.[512] The study questioned the usefulness of written media for presenting vocational information and enhancing women's occupational potential.

Finally, Crow (1973) found no significant effects from a vocational exploration group experience on measures of control-expectancy self-esteem, and vocational maturity.[513]

Taken together, the studies at the high school level indicate that significant and dramatic changes can be induced as a result of several different types of interventions. Successful interventions included the reading of sex-linked vocational information, an intensive consciousness-raising curriculum, a cognitive-developmental curriculum intervention focusing on Women in Literature, and a career awareness course with and without an assertion training component.

The studies reviewed in this section at all three levels point to the same conclusion. Sex role stereotypes, sex-typed occupational aspirations, and many other aspects of girls' occupational potential are modifiable. Still, the task remains for educators, practitioners, and researchers to develop and implement effective nonsexist interventions at every level. Eventually, these "interventions" may become a part of the regular curriculum, resulting in vast improvements in the occupational potential of girls. Ultimately, such a nonsexist curriculum could lead to vast improvements in women's occupational status.

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